US ARMY CORPS
OF ENGINEERS
New England District

Contract No. DACW33-01-D-0004
Delivery Order No. 02
May 2003

Final Report

SUMMER 2002 LOBSTER CHARACTERIZATION REPORT

RHODE ISLAND REGION LONG-TERM DREDGED MATERIAL DISPOSAL SITE EVALUATION PROJECT

FINAL

Summer 2002 Lobster Characterization Report

Rhode Island Region
Long-Term Dredged Material Disposal Site Evaluation Project

Contract Number DACW33-01-D-0004
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to

U.S. Army Corps of Engineers
North Atlantic Division
New England District
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Acronyms

Ag	silver
As	arsenic
Be	beryllium
BOSS	Battelle Ocean Sampling System
CMC	Criteria Maximum Concentration
CVAF	cold vapor atomic fluorescence
Cd	cadmium
CL	carapace length
Corps	U.S. Army Corps of Engineers
CPUE	catch per unit effort
Cr	chromium
Cu	copper
CVAA	cold vapor atomic absorption
dGPS	differential Global Positioning System
DO	dissolved oxygen
EML	estimated minimum level
EPA	U.S. Environmental Protection Agency
FDA	U.S. Food and Drug Administration
Fe	iron
FIAS	flow infection atomic spectroscopy
GC/ECD	gas chromatography/electron capture detection
GC/FPD	gas chromatography/flame photometric detection
GC/MS	gas chromatography/mass spectrometry
GFAA	graphite-furnace atomic absorption
Hg	mercury
HGAA	hydride atomic absorption
HPLC	high-pressure liquid chromatography
ICP-MS	inductively-coupled-plasma-mass spectrometry
L	liter
m	meter
µg/g	microgram per gram
MDL	Method Detection Limit
mg	milligrams
mL	milliliter
MADEM	Massachusetts Department of Environmental Management
MPRSA	Marine Protection Research and Sanctuaries Act
MS/MSD	Matrix Spike/Matrix Spike Duplicate
ng/g	nanograms per gram
NOAA	National Oceanic and Atmospheric Administration
Ni	nickel
PAH	polynuclear aromatic hydrocarbon
Pb	lead
PCB	polychlorinated biphenyl
PCDD	polychlorinated dibenzo-p-dioxins
PCDF	polychlorinated dibenzofurans
PD	Percent Difference
Pd	palladium
pg/g	picograms per gram
QAPP	Quality Assurance Project Plan
QC	quality control
QL	quantitation limit
RIDEM	Rhode Island Department of Environmental Management

Acronyms (cont'd)

RIS	Recovery Internal Standard
RL	Reporting Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
Se	selenium
SIM	selective ion monitoring
SIS	Surrogate Internal Standard
SOP	Standard Operating Procedure
SRM	Standard Reference Material
TBT	tributyltin
TCDD	tetrachlorodibenzo-p-dioxin
TCDF	tetrachloro-dibenzofuran
TSS	Total Suspended Solids
WHO	World Health Organization
Zn	zinc

1.0 INTRODUCTION

The Rhode Island Region Long-Term Dredged Material Disposal Site Evaluation Project includes the collection of environmental baseline data at Rhode Island Sound Sites 16, 18, 69A, and 69B (Figure 1). Site 16 is the only site that had been used previously for disposal of dredge material. Site characterization efforts are designed to fulfill the baseline monitoring requirements defined in the Marine Protection Research and Sanctuaries Act (MPRSA) regulations at Part 228.13. This includes obtaining information within Rhode Island Sound, which will be used to evaluate secondary impacts from disposal, and also to assist in the identification of suitable reference areas for long-term monitoring.

Site characterization goals include documentation of existing physical, chemical, and biological conditions at the sites to (a) provide a basis for comparison of the biological value of the sites (habitat characterizations); (b) assess the suitability of each site for dredged material disposal (bathymetry, sediment type, hydrodynamics); and (c) assess potential short- and long-term impacts from dredged material disposal at each site.

The U.S. Army Corps of Engineers (the Corps) New England District, with consultation from the U.S. Environmental Protection Agency (EPA) Region 1, contracted Battelle to conduct sampling and analysis of lobster from Rhode Island Sound in Summer 2002. The purpose of the lobster survey was to characterize lobster resources in terms of abundance, size ranges, sex, and extent of chitinoclasia (shell disease) and to collect near-legal-size lobsters for chemical analysis of tissues (Table 1).

2.0 METHODS

This section provides an overview of the methods and protocols used in the survey conducted to collect lobster samples. More detailed descriptions of the methods are contained in the Quality Assurance Project Plan (QAPP) (Battelle, 2001a).

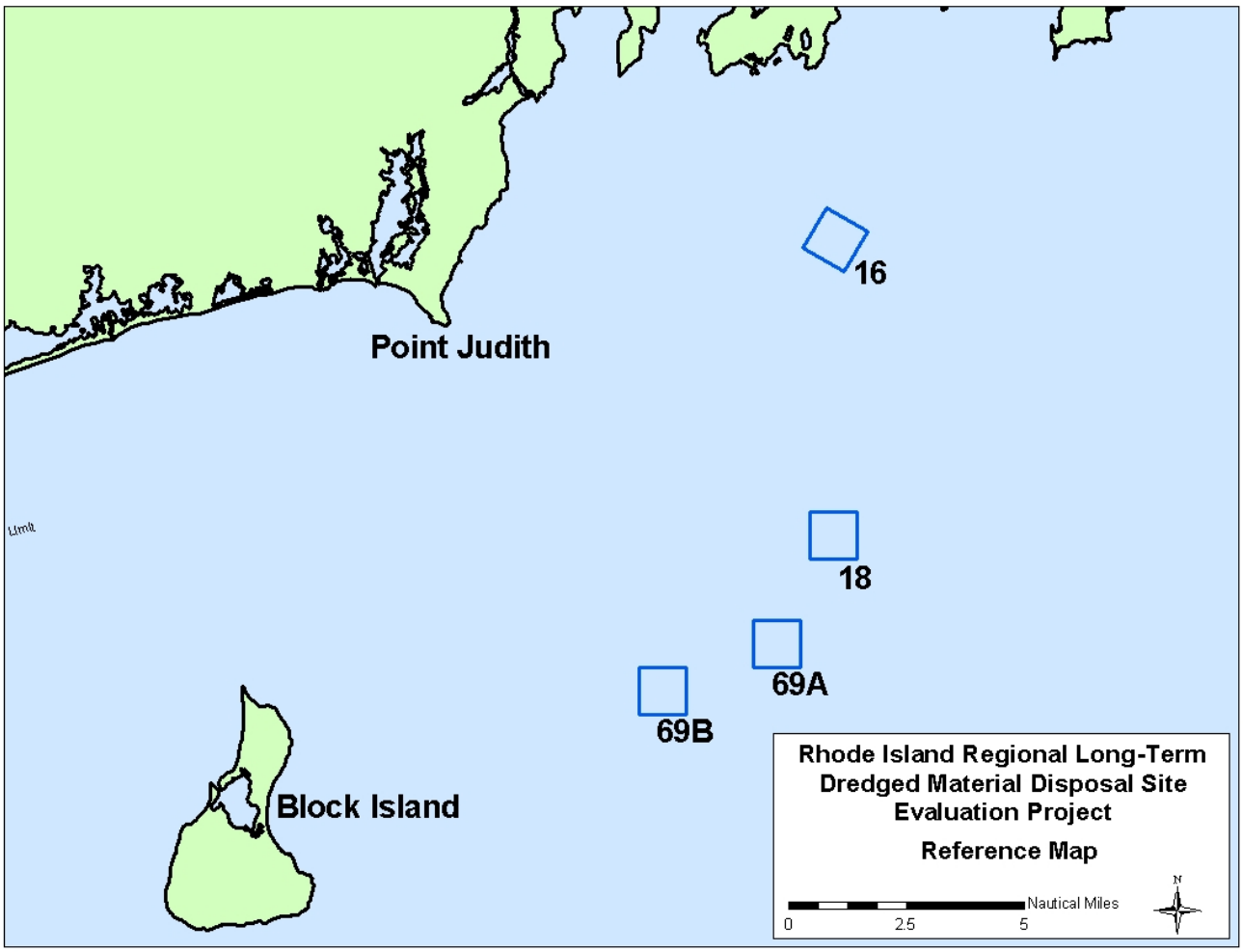


Figure 1. Map of the Four Study Sites in Rhode Island Sound.

Table 1. Specific Chemical Analytes Included in Tissue Chemistry Analyses.

Chemical Analytes	
Trace Metals	**Bis(2-ethylhexyl)phthalate**
Arsenic	**Pesticides**
Beryllium	2,4′-DDD
Cadmium	2,4′-DDE
Chromium	2,4′-DDT
Copper	4,4′-DDD
Lead	4,4′-DDE
Mercury	4,4′-DDT
Nickel	Total DDTs (sum of six DDT-related compounds)
Selenium	Aldrin
Silver	cis-Chlordane
Zinc	Dieldrin
Organotins	Endosulfan I
Monobutyltin	Endosulfan II
Dibutyltin	Endosulfan sulfate
Tributyltin	Endrin
Tetrabutylin	g-BHC
Polychlorinated Biphenyls (PCBs)	Heptachlor
2,4′-Cl_2(8)	Heptachlorepoxide
2,2′,5-Cl_3(18)	Hexachlorobenzene
2,4,4′-Cl_3(28)	Mirex
2,2′,3,5′-Cl_4(44)	Toxaphene
2,2′,5,5′-Cl_4(52)	trans-Nonachlor
2,3′,4,4′-Cl_4(66)	**Dioxins/Furans**
2,2′4,5,5′-Cl_5(101)	2,3,7,8-Tetrachlorodibenzo-p-dioxin
2,3,3′,4,4′-Cl_5(105)	2,3,7,8-Tetrachlorodibenzofuran
2,3′,4,4′5-Cl_5(118)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
2,2′,3,3′,4,4′-Cl_6(128)	1,2,3,7,8-Pentachlorodibenzofuran
2,2′,3,4,4′,5′-Cl_6(138)	2,3,4,7,8-Pentachlorodibenzofuran
2,2′4,4′,5,5′-Cl_6(153)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
2,2′3,3’,4,4′,5-Cl_7(170)	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
2,2′,3,4,4′,5,5′-Cl_7(180)	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
2,2′,3,4’,5,5′,6-Cl_7(187)	1,2,3,4,7,8-Hexachlorodibenzofuran
2,2′,3,3′,4,4′,5,6-Cl_8(195)	1,2,3,6,7,8-Hexachlorodibenzofuran
2,2′,3,3′4,4′,5,5′,6-Cl_9(206)	1,2,3,7,8,9-Hexachlorodibenzofuran
Decachlorobiphenyl-Cl_{10}(209)	2,3,4,6,7,8-Hexachlorodibenzofuran
Total PCBs (2 x sum of congeners)	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
Polynuclear Aromatic Hydrocarbons (PAHs)	1,2,3,4,6,7,8-Heptachlorodibenzofuran
Acenaphthene	1,2,3,4,7,8,9-Heptachlorodibenzofuran
Acenaphthylene	Octachlorodibenzo-p-dioxin
Anthracene	Octachlorodibenzofuran
Benzo[*a*]anthracene	**Dioxin-Like PCBs**
Benzo[*a*]pyrene	PCB77
Benzo[*b*]fluoranthene	PCB81
Benzo[g,h,i]perylene	PCB105
Benzo[*k*]fluoranthene	PCB114
Chrysene	PCB118
Dibenzo[*a,h*]anthracene	PCB123
Fluoranthene	PCB126
Fluorene	PCB156
Indeno[1,2,3-*c,d*]pyrene	PCB157
Naphthalene	PCB167
Phenanthrene	PCB169
Pyrene	PCB189
Total PAHs (sum of PAHs)	**Lipid**
	Percent Moisture

2.1 Stations and Sampling

The Summer 2002 lobster survey conducted between July 29, 2002 and August 3, 2002 was to characterize lobster resources in terms of abundance, size ranges, sex, and extent of chitinoclasia (shell disease), and to collect near-legal-size lobsters for chemical analysis of tissues. A total of 120 lobster traps (60 vented and 60 un-vented) were deployed, 30 within each of the four candidate sites (Sites 16, 18, 69A & 69B). Table 2 presents the sampling dates and locations of the 2002 lobster sampling. Figure 2 shows the trawls conducted at each of the monitoring locations.

Table 2. Summary of Field and Navigation Data Collected During the Summer 2002 Lobster Survey.

Site	Trawl#	Date	Time (EST)	Start Location Lat/Long	Finish Location Lat/Long	Depth (Ft.)
16	1	7/30/2002	0821	41º23.316'N 71º78.568'W	41º23.402'N 71º18.535'W	83
	2	7/30/2002	0830	41º23.945'N 71º18.114'W	41º23.884'N 71º18.172'W	94
	3	7/30/2002	0841	41º23.582'N 71º17.100'W	41º23.520'N 71º17.162'W	94
	4	7/30/2002	0849	41º23.336'N 71º18.084'W	41º23.435'N 71º18.003'W	93
	5	7/30/2002	0904	41º23.129'N 71º17.556'W	41º23.067'N 71º17.641'W	98
18	1	7/30/2002	0952	41º17.390'N 71º17.406'W	41º17.293'N 71º17.473'W	117
	2	7/30/2002	0959	41º16.913'N 71º17.378'W	41º16.834'N 71º17.453'W	117
	3	7/30/2002	1007	41º17.250'N 71º17.978'W	41º17.179'N 71º18.056'W	124
	4	7/30/2002	1015	41º17.398'N 71º18.614'W	41º17.495'N 71º18.550'W	114
	5	7/30/2002	1026	41º16.874'N 71º18.575'W	41º17.980'N 71º18.522'W	119
69A	1	7/30/2002	1112	41º15.066'N 71º19.030'W	41º15.001'N 71º19.112'W	118
	2	7/30/2002	1119	41º14.579'N 71º19.048'W	41º14.662'N 71º18.999'W	121
	3	7/30/2002	1129	41º14.806'N 71º19.696'W	41º14.892'N 71º19.648'W	119
	4	7/30/2002	1138	41º15.252'N 71º20.054'W	41º15.184'N 71º20.127'W	118
	5	7/30/2002	1150	41º14.486'N 71º20.156'W	41º14.567'N 71º20.096'W	116
69B	1	7/30/2002	1209	41º14.181'N 71º22.282'W	41º14.112'N 71º22.376'W	123
	2	7/30/2002	1218	41º13.508'N 71º22.489'W	41º13.597'N 71º22.436'W	126
	3	7/30/2002	1225	41º13.837'N 71º22.877'W	41º13.758'N 71º22.965'W	121
	4	7/30/2002	1235	41º13.478'N 71º23.385'W	41º13.573'N 71º23.346'W	124
	5	7/30/2002	1244	41º14.209'N 71º23.148'W	41º14.113'N 71º23.253'W	121

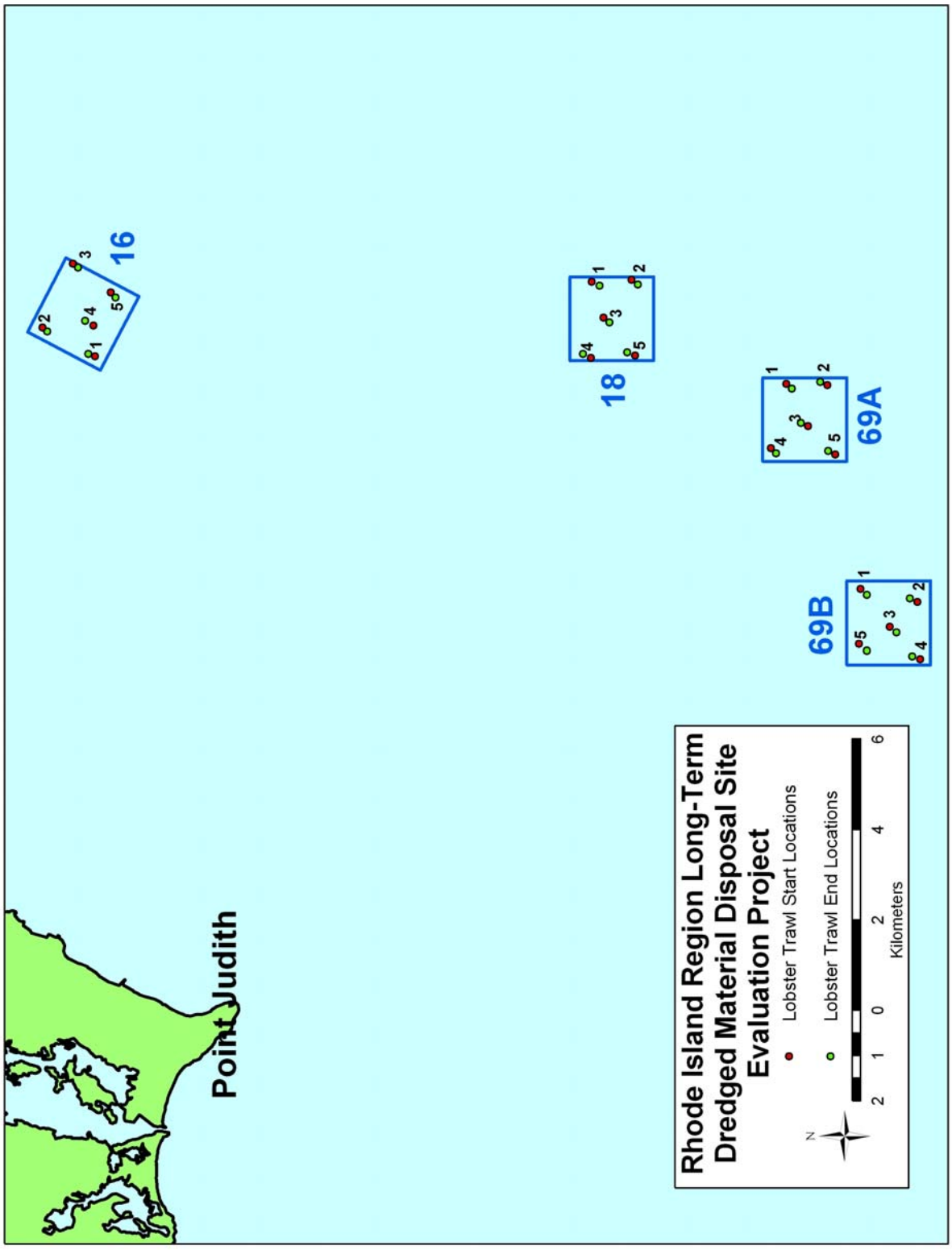


Figure 2. Lobster Trawl Deployment Locations in Rhode Island Sound, Summer 2002. Individual Trawl Deployments are Numbered (1-5) at Each Site.

The F/V Mister G, owned and operated by Captain Michael Marchetti, was the sampling platform for the survey. During trap deployment on July 30, the scientific crew included Mr. Wayne Trulli and Mr. Robert Mandeville of Battelle. During recovery on August 2 and 3, the scientific crew included Mr. Trulli and Mr. Mandeville, Mr. Michael Keegan of the Corps, and Mr. Thomas Angell of the State of Rhode Island Department of Environmental Protection (RIDEM). There were several phases to this operation, which included mobilization, navigation, trap deployment, trap recovery and characterization, and tissue chemistry collection. Each of these phases is described below.

2.1.1 Mobilization

Several activities were conducted one day prior to trap deployment and consisted of:

- Rigging 60 new traps with bridles that were attached to ground lines by back-splicing the bridles to the traps,
- Locating the 60 traps leased to the study by the Lobsterman's Association, recovering them from a grassy field, loading them onto a truck, and transporting them to the vessel,
- Rigging 20 trawls lines each with 6 traps (3 vented and 3 un-vented),
- Baiting each trap with skate or red hake,
- Loading and stacking the traps on the vessel,
- Laying the ground lines for all 20 trawls so that each 6-trap trawl deployed without entangling the ground lines of the other trawls.

2.1.2 Navigation

Navigation was accomplished using the differential Global Positioning System (dGPS) receiver aboard the F/V *Mister G* accurate to within 5 meters (m). The navigation data-stream output from the receiver was linked to NavSam®, the proprietary Battelle navigation software system, via RS232 connection. The system recorded all of the ship's navigation data at 1-second intervals, and was used to mark the coordinates of lobster trawl deployments at each of the five targeted locations within each site.

2.1.3 Deployment

On July 30, five six-trap trawls approximately 500-m long (~100-m ground lines between each trap) were deployed at each of the targeted sites starting with Site 16, Site 18, Site 69A, and finishing with Site 69B. All 20 trawls were deployed in a single day. One trawl was deployed in each of the four corners as well as in the center of each site. Trawls were rigged with alternating vented and unvented traps. Vented traps are normally used by lobstermen to allow juveniles to escape and enhance their chance of survival and growth to legal sized adult lobsters. Unvented traps were used for this study to capture juvenile lobsters and characterize the resource in terms of juvenile abundance. Each trawl was oriented along a northeast to southwest track, which conformed to the orientation of other lobster trawls in the area. Table 2 lists the start and end times and coordinates for each trawl deployed. Figure 2 shows a site map with the individual trawl locations.

After the last trap was deployed, the trawls were allowed to set on site for three days. It was determined in discussions among EPA, the Corps, Battelle, and Captain Marchetti that three days was the optimum set time to afford the greatest catch size and minimize cannibalism among the lobsters, particularly by adults on the juveniles in the unvented traps.

2.1.4 Recovery and On-board Processing

On August 2 and 3, 2002, following the three-day set, the lobster traps were recovered over a two-day period. Traps at Sites 69B and 69A were recovered on August 2 and traps at Sites 18 and 16 were recovered on August 3. For each trap recovered, the lobsters were removed by hand and stored in bins until they could be processed. Processing involved measuring carapace length of each individual, sexing, and examining for shell disease, V-notching and other surficial anomalies. The lobster processing data from the Summer 2002 survey are presented in Appendix A. Abundance of by-catch caught in the traps including crabs and fish was recorded, and the organisms discarded (measurements, sexing, and further examination of by-catch were not performed because these activities were not required in the scope of work).

Mr. Tom Angel of the RIDEM performed all carapace measurements, sexing, and examinations for shell disease, V-notching, shell hardness, cull status, and surficial damage in accordance with the methods he uses routinely on lobster surveys for the State of Rhode Island. All field data were recorded both by hand and by tape recorder. Processing methods are provided below.

Carapace length for each lobster, including juveniles, was determined by measuring from the back of the eye-socket straight back (toward the tail) to the end of the carapace where the tail begins. These measurements and inspections were made as soon as possible after capture to improve chances of survival. Measurements were made to the nearest millimeter (mm) using a metric ruler. The measurement and inspection methods used in this study were consistent with those commonly used in commercial practice.

Sexing of each animal was performed by examining the first pair of modified swimmerets on the tail of each lobster. A long stiff pair of swimmerets is indicative of a male lobster and a soft feathery pair is indicative of a female.

V-notching of legal-sized berried female lobsters has been conducted by National Marine Fisheries Services staff and lobstermen over the past several years as a means to help protect the resource (V-notched individuals by regulation are not allowed to be taken). This is done using a special tool that notches the telson (tail) of appropriate individuals. The lobsters are released back into the environment and cannot be harvested until the notch reaches a size below minimum (~0.25 inches following several molts). During this study, V-notched status was recorded and all notched individuals were returned to the environment (these were not considered for chemical analysis).

Other surficial anomalies, such as cull status and surficial damage (other than due to shell disease), were recorded on the survey field log forms but not transferred to the database table, as

this information was not required in the scope of work. Survey field logs are available upon request.

Percent Chitinoclasia (Shell Disease) was determined by estimating the range of coverage on each individual lobster. All specimens were examined for signs of disease. Gross signs of the disease are similar in all crustacean species; the exoskeleton is pitted and marred with necrotic lesions. Also, weak or soft parts found on an otherwise apparently healthy lobster's shell is often indicative of shell disease. The shell disease index developed in the year 2000 by the RIDEM (Angell, 2002) and briefly described below was used to assess shell disease for individual lobsters. This index is based on the percent shell coverage of disease symptoms (pitting, erosions, lesions) on the total surface area of the lobster. The index includes the following categories: 0 = No shell disease symptoms; 1 = Shell disease symptoms on 1 to 10% of the shell surface; 2 = Shell disease symptoms on 11 to 50% of the shell surface; 3 = Shell disease symptoms on more than 50% of the shell surface; and OLD = New shell shows scars of a shell erosion from the previous shell. The condition of each lobster's shell was noted in the field log.

2.1.5 Tissue Chemistry Sampling and Processing

Ten non-V-notched individuals at Sites 18, 69A, and 69B and 30 non-V-notched individuals at Site 16 were retained for further processing and chemical analysis of lobster flesh and hepatopancreas. Specimens selected for chemical analysis were "commercially harvestable," which for the purposes of this study is defined as non-gravid, near legal-sized (82.6 mm carapace length) lobsters. Lobsters collected for chemical analysis were as close to 1 pound as possible. When possible, one or two appropriately sized individuals from each six-trap trawl were collected to distribute the specimens for chemical analysis among trawls at a site. Trawl, trap, and individual number of specimens were recorded and used to label each individual in the field. These specimens were banded with one band per claw and labeled. Sampling location information was derived from the coordinates recorded upon deployment of the trap trawls. Following capture, specimens were stored on ice and were transported to the Duxbury laboratory at the end of each sampling day. Upon return to the laboratory, the lobsters were removed from the ice and frozen in a dry cooler.

2.2 Compositing Scheme

At the laboratory, all individual lobsters were counted and numbered consecutively; those retained for chemical analysis were assigned a unique Laboratory Information Management Systems (LIMS) identification number. Two separate composite samples for chemical tissue analysis were formed from the 10 specimens collected at each of Sites 18, 69A, and 69B, with each composite sample consisting of 5 lobsters (Table 3). One composite sample from each site was analyzed, the remaining sample composite was archived for future reference. Six composite lobster samples for chemical tissue analysis were formed from the 30 specimens collected at Site 16, with each sample consisting of 5 lobsters. Five of the Site 16 samples were analyzed for tissue chemistry, and one sample was archived for future reference. For all composite samples, lobsters in the same composite sample did not vary in weight by more than 25%. The compositing scheme used for lobster edible tissue and hepatopancreas is shown on Table 3.

Table 3. Compositing Matrix for Lobster Samples (Meat and Hepatopancreas).

Type of Tissue	Station	Composite ID	# of Aliquots/Composite Sample				# of Composite
			Dioxins/ furans/ WHO PCBs	PAH/Phthalate/ Pesticide/ PCB/Lipid	Tins	Metals	
Meat	16[a]	V7400	1	1	1	1	1 composite with 5 lobsters
		V7401	1	1	1	1	1 composite with 5 lobsters
		V7402	1	1	1	1	1 composite with 5 lobsters
		V7403	1	1	1	1	1 composite with 5 lobsters
		V7404	1	1	1	1	1 composite with 5 lobsters
	18[b]	V7405	1	1	1	1	1 composite with 5 lobsters
	69A[b]	V7406	1	1	1	1	1 composite with 5 lobsters
	69B[b]	V7407	1	1	1	1	1 composite with 5 lobsters
Hepato-pancreas	16[a]	V7408	1	1	0	1	1 composite with 5 lobsters
		V7409	1	1	0	1	1 composite with 5 lobsters
		V7410	1	1	0	1	1 composite with 5 lobsters
		V7411	1	1	0	1	1 composite with 5 lobsters
		V7412	1	1	0	1	1 composite with 5 lobsters
	18[b]	V7414	1	1	0	1	1 composite with 5 lobsters
	69A[b]	V7415	1	1	0	1	1 composite with 5 lobsters
	69B[b]	V7416	1	1	0	1	1 composite with 5 lobsters

[a] Six lobster composites were formed for Site 16, but only five were analyzed.
[b] Two lobster composites were formed for Sites 18, 69A, and 69B, but only one from each site was analyzed.

2.3 Dissection and Processing of Lobster for Chemical Analysis

Lobsters selected for chemical analysis were first rinsed thoroughly with tap water, followed by a distilled water rinse. The hepatopancreas was removed. Five composites were created at Site 16, and one composite was created for each of the remaining three sites for chemical analysis (Table 3). Each composite contained five lobsters. Hepatopancreas composite were frozen until chemical analysis was initiated. The tail and claw meat (edible tissue) was stored frozen in the shells until processed in the laboratory.

Prior to homogenization, all tools and utensils used were cleaned thoroughly with a detergent solution, rinsed with tap water, soaked in 50% HNO_3 (reagent grade or better), for 12 to 24 hours at room temperature, and then rinsed with organics- and metal-free water. Homogenization of lobster meat was performed using a stainless steel TEKMAR® tissuemizer. Hepatopancreas samples were homogenized using a titanium knife to avoid metals contamination. Each composite was placed in a sample container clearly identified with the unique sample identifier. After homogenization, samples were split for metals and organic analyses. Samples for analyses to be performed off-site were shipped frozen by overnight freight to Battelle Sequim (metals analysis) and Columbus (dioxins/furans/World Health Organization (WHO) polychlorinated biphenyls (PCBs) analysis).

2.4 Morphological/Pathological Analysis

Morphological/pathological analysis was performed in the field, and was described in Section 2.1.4 (Recovery and On-board Processing) of this report.

2.5 Chemical Analysis

Lobster meat and hepatopancreas samples were analyzed for moisture content, methylene-chloride-extractable lipid content, PCB congeners, chlorinated pesticides, polyaromatic hydrocarbons (PAHs), Bis(2-ethylhexyl)phthalate, organotins, dioxins/furans, dioxin-like PCB congeners (also referred to as the 12 WHO PCBs), and metals (Table 1). General descriptions of analytical methods are provided below, and are detailed in the project QAPP (Battelle, 2001a).

2.5.1 Moisture Content

Moisture content was determined following Battelle Duxbury Standard Operating Procedure (SOP) SOP 5-190 (Battelle, 2002). Briefly, 1 to 5 grams (g) of well-mixed tissue homogenate was weighed into a pre-weighed, pre-baked, aluminum weighing pan. The pan was placed in a drying oven and dried overnight at approximately 105 ºCelsius (C). After approximately 24 hours, the pan was removed from the drying oven and allowed to cool at room temperature for at least 30 minutes. The pan was reweighed, and percent moisture was determined.

2.5.2 Lipid Content

Tissue samples were analyzed for lipid content in accordance with Battelle SOP 5-299, *Determination of Tissue Lipid Concentration Using the Modified Bligh and Dyer Method* (Battelle, 2001b). This method is based on the original Bligh and Dyer method (Bligh and Dyer, 1959) for extracting lipids. Modifications included using a much smaller sample aliquot (<10 grams wet) and using centrifugation rather than filtering to separate and isolate the appropriate solvent layers. Results were reported in percent wet weight. The only required QC for this parameter was a laboratory duplicate with each set of 20 or fewer samples, by matrix (e.g., lobster meat and hepatopancreas).

2.5.3 Chlorinated Pesticides, PCB Congeners, PAHs, and Phthalate

Tissues were extracted and cleaned following procedures in Battelle SOP 5-190, which are methods developed by Battelle in support of National Oceanic and Atmospheric Administration (NOAA) National Status and Trends (NS&T) Mussel Watch Project (Peven and Uhler, 1998). Approximately 10 to 30 g of wet tissue homogenate was weighed into a Teflon extraction jar, spiked with the appropriate surrogate internal standard (SIS) compounds, combined with 75 milliliters (mL) dichloromethane (DCM) and sodium sulfate, macerated with a tissuemizer, and centrifuged. The extract was decanted into an Erlenmeyer flask. This process was repeated a second time using an additional 75 mL DCM. A third extraction was performed on the sample using 50 mL DCM and shaking on a shaker table for approximately 30 minutes. The sample was then centrifuged a third time and the solvent decanted into the Erlenmeyer flask with the rest of

the sample extract. The combined extract was dried over sodium sulfate, filtered (if necessary), and concentrated by Kuderna-Danish (KD) technique to approximately 10 mL. A measured aliquot of extract was removed for lipid determination. The remaining extract was concentrated to approximately 2 to 3 mL and processed through an alumina cleanup column, concentrated again and split 50:50 for separate gel permeation chromatography (GPC) high pressure liquid chromatography (HPLC) cleanup for PAH/phthalate and PCB/pesticides. The post-HPLC extract for PCB/pesticide analysis was solvent exchanged into hexane, fortified with recovery internal standards (RIS) and submitted for gas chromatography/electron-capture detector (GC/ECD) analysis. The post-HPLC extract for PAH/phthalate analysis was also fortified with RIS and submitted for gas chromatography/mass spectrometer (GC/MS) analysis.

A routine set of quality control samples was prepared and analyzed with each batch of 20 or fewer samples to monitor data quality in terms of accuracy and precision.

GC/ECD Analysis

Chlorinated Pesticides/PCB congeners were analyzed by GC/ECD following Battelle SOP 5-128 (Battelle, 2001c). The instrument was equipped with two ECD detectors and 2, 60-meter (m) capillary columns of different polarities (DB-5 and DB-1701). The instrument was also equipped with electronic pressure controlled inlet and used hydrogen carrier gas. Concentrations of target analytes were quantified using the method of internal standards based on the RIS added just prior to analysis. Data were reported on a wet weight basis.

GC/MS Analysis

PAHs and phthalate were analyzed by GC/MS in the selective ion monitoring (SIM) mode using a 30-m DB5 column and a Hewlett Packard 5972 (or 5973) detector following procedures in Battelle SOP 5-157 (Battelle, 2001d). Concentrations for all target analytes were determined by the method of internal standards, using RISs for quantification. Sample results were reported on a wet weight basis.

2.5.4 Organotins

Tissue samples requiring organotin analysis were extracted, cleaned, and analyzed following procedures in Battelle SOP 5-196, *Measurement of Butyltin Species in Tissue and Sediment/Soil* (Battelle, 2001e), which are methods developed by Battelle in support of NOAA's NS&T Project (Peven and Uhler, 1998). Sample extracts were analyzed by gas chromatography/flame photometric detection (GC/FPD) using a tin-specific photometer. Concentrations of target analytes were quantified by the method of internal standards, using SISs, thereby correcting for sample loss during extraction and clean-up. Sample results were reported on a wet weight basis. The results of tributyltin (TBT) were reported as blank corrected; results for analysis for all other organotins were not blank corrected.

2.5.5 Dioxins/Furans and Dioxin-like PCBs

Lobster tissue samples (meat and hepatopancreas) were extracted and analyzed for the 17 2,3,7,8-substituted polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF)

following the general procedures in EPA Method 1613, Revision B (EPA, 1994a), as described in Battelle Columbus SOPs ASAT.II-001-02 and ASAT.II-002-02 (Battelle, 2000a; Battelle, 2000b) with modifications noted below. Tissue samples were also extracted and analyzed for dioxin-like PCBs (also referred to as the 12 WHO PCBs) following the general procedures in EPA Method 1668, Revision A (EPA, 1999), as described in Battelle Columbus Operations SOP ASAT.II-009-00 (Battelle, 2001f) and as noted below.

Aliquots of each homogenized tissue sample were weighed into individual jars and mixed with Hydromatrix drying agent. Approximately 3-10 g wet weight of each tissue sample was used. The tissue/Hydromatrix mixtures were placed into Accelerated Solvent Extraction (ASE) cells and spiked with $^{13}C_{12}$-labeled PCDD/PCDF and labeled PCB internal standard solutions. Matrix spike, matrix spike duplicate, and laboratory control samples (LCS) were spiked with native PCDD/PCDF and PCB at this time. The samples received internal standard and matrix spike standards at twice the usual level to accommodate the sample being split in half for separate WHO PCB and PCDD/PCDF cleanup.

The samples were ASE extracted using $MeCl_2$: hexane (1:1). Each extract was spiked with 2,3,7,8-TCDD-$^{37}Cl_4$ cleanup standard for monitoring recovery of analytes through the cleanup procedures. Each extract was acid washed. After the acid wash step, the samples were split in half, with one aliquot for PCB processing and the other aliquot for dioxin/furan processing.

The PCB aliquots were cleaned by acid/base silica, alumina, followed by additional acid/base silica cleanup columns. The tissue extracts were spiked with $^{13}C_{12}$-labeled PCB recovery standards and concentrated to a final sample volume of 50 μL.

The dioxin/furan aliquots were then processed through acid/base silica, alumina, and carbon cleanup columns. The tissue extracts were spiked with 1,2,3,4-TCDD-$^{13}C_{12}$ and 1,2,3,7,8,9-HxCDD-$^{13}C_{12}$ recovery standard and concentrated to a final sample volume of 20 μL.

PCDD/PCDF Analysis

Each extract was analyzed by gas chromatography/high resolution mass spectrometry (GC/HRMS) in the selected-ion-monitoring mode at a resolution of 10,000 or greater. A DB5 column was used for initial analysis of the 17 2,3,7,8-PCDD/PCDF; and a DB225 column was used for second column confirmation of 2,3,7,8-TCDF. All analytes were quantified by isotope dilution or by method of internal standards using surrogate compounds. Data were reported in picograms per gram (pg/g) on a wet weight basis.

PCB Analysis

Each extract was analyzed by gas chromatography/high resolution mass spectrometry (GC/HRMS) in the selected ion-monitoring mode at a resolution of 10,000 or greater. A SuPelco Bonded (SPB)-Octyl column was used for analysis of the PCB congeners. All analytes were quantified by isotope dilution or by method of internal standards using surrogate compounds. Data were reported in pg/g on a wet weight basis.

2.5.6 Metals

Eleven metals were analyzed: silver (Ag), arsenic (As), beryllium (Be), cadmium (Cd), chromium (Cr), copper (Cu), mercury (Hg), nickel (Ni), lead (Pb), selenium (Se), and zinc (Zn). To prepare for analysis, the tissues were freeze-dried, then blended in a Spex mixer-mill. Sample percent moisture/dry weight was determined according to Battelle SOP MSL-C-003 (Battelle, 2000c). Tissue samples were digested using aqua regia according to Battelle SOP MSL-I-024, *Mixed Acid Tissue Digestion* (Battelle, 2000d). An approximately 500 milligram (mg) (dry weight) aliquot of each sample was combined with nitric and hydrochloric acids (aqua regia) in a Teflon bomb and heated in an oven at 130ºC (±10ºC) overnight. After heating and cooling, deionized water was added to the tissue digestate to achieve analysis volume and the digestates were submitted for analysis.

Sample digestates were analyzed for Ag, As, Be, Cd, Cr, Cu, Ni, Pb, and Zn using inductively coupled plasma-mass spectrometry (ICP-MS) according to Battelle SOP MSL-I-022, *Determination of Elements in Aqueous and Digestate Samples by ICP/MS* (Battelle, 2000e). This procedure is based on two methods modified and adapted for analysis of solid sample digestates: EPA Method 1638, *Determination of Trace Elements in Ambient Waters by Inductively Coupled Plasma-Mass Spectrometry* (EPA, 1994b) and EPA Method 1640, *Determination of Trace Elements in Water by Preconcentration and Inductively Coupled Plasma-Mass Spectrometry* (EPA, 1999). Sample digestates were analyzed for Hg using cold-vapor atomic absorption spectroscopy (CVAA) according to Battelle SOP MSL-I-016, *Total Mercury in Tissues and Sediments by Cold Vapor Atomic Absorption* (Battelle, 2000f). Sample digestates were analyzed for Se using hydride generation atomic absorption (HGAA) spectroscopy with flow injection analysis system (FIAS) according to Battelle SOP MSL-I-030, *Determination of Metals in Aqueous and Digestate Samples by HGAA* (Battelle, 2001g).

All results were reported in units of microgram per gram (µg/g) on a dry-weight basis and converted to µg/g on a wet-weight basis, calculated using the percent dry weight of each sample. The results were not blank corrected.

2.5.7 Data Quality Objectives

Table 5 provides the data quality objectives for accuracy, precision, completeness and comparability for chemical analyses. Appendix B shows the individual data results for each of the tissue (meat and hepatopancreas) samples and the associated quality control results for each of the analysis.

Accuracy

Analytical accuracy was evaluated based on percent recoveries of analytes in blank and matrix spike samples and the SIS that were added to every sample (organics only), as well as the results of the procedural blank and standard reference material (SRM) samples that were analyzed with each batch of up to 20 field samples. Specific accuracy goals are listed in Table 4. Achieved method detection limits (MDLs) and project quantitation limit (QL) goals for analytes of interest are presented in Table 5.

Table 4. Data Quality Objectives for the Analysis of Tissue Samples.

QC Type (1)	Acceptance Criteria	Corrective Action
Procedural Blanks		
Pesticide/PCB/PAH/Phthalate/Organotins	< RL	Reextract and/or reanalyze; document corrective actions or justify
Dioxin/Furans	<5x MDL	
12 WHO PCBs	<5x EML	
Metals	< 5x MDL	
	All parameters – or associated samples > 10x blank values	
Accuracy		
Surrogate Internal Standards (SIS)		
Pesticide/PCB/PAH/Phthalate	40-125% recovery	Reextract, reanalyze or justification documented
Dioxins/Furans and WHO PCB	25–150% recovery	
Organotins	30–125% recovery	
Laboratory Control Sample		
Pesticide/PCB/PAH/Phthalate	40-120% recovery for 90% of analytes	Review with Project or Laboratory Manager; reanalyze or justify in project records
Organotins	30-120% recovery for 90% of analytes	
Dioxin/Furans (LCS)	Method 1613B, Table 6, "OPR" requirements[c]	
12 WHO PCB (LCS)	Method 1668A, Table 6, "OPR" requirements	
Metals	70-130% recovery[a]	
Matrix Spikes		
Pesticide/PCB/PAH/Phthalate	40-120% recovery for 90% of analytes	Reextract, reanalyze or justification documented.
Organotins	30-120% recovery for 90% of analytes	
Dioxin/Furans	50-120% recovery	
12 WHO PCB	50-150% recovery for 90% of analytes	
Metals	70-130% recovery[a]	
Standard Reference Material (SRM)		
Pesticide/PCB/PAH/Phthalate	PD ≤30%[b] (using surrogate corrected data; certified concentration in SRM must be >3X RL)	Reextract, reanalyze or justification documented.
Dioxin/Furan	PD ≤30% from certified values (for certified analytes >5x MDL)	
12 WHO PCB	PD ≤30% from certified values (for certified analytes >3x EML)	
Metals	PD ≤25% from certified values (for certified values >5X MDL)	
Precision		
Laboratory Duplicates (MS/MSD/DUP)		
Pesticide/PCB/PAH/Phthalate/Organotins	≤30% RPD[a] for at least 90% of analytes (for analytes detected at level >3x RL)	Lab Duplicates: Review with Project or Laboratory Manager; reanalyze or justify project records MS/MSD: Reextract, reanalyze or justification documented.
Dioxin/Furan	≤30% RPD[a] (for analytes detected at level >10x MDL)	
12 WHO PCBs	≤30% RPD[a] for at least 90% of analytes (for analytes detected at level >3x EML)	
Metals	≤30% RPD[a]	

[1] QC samples prepared with each set of 20 or fewer study samples; lab duplicate, MS and MSD prepared by sample type.
[a] Concentration of spiked analytes in MS/MSD must be >5x background concentration to be used for data quality assessment.
[b] If detected value falls within the *range of certified values*, then the Percent Difference (PD) is reported as 0.0. However, if the detected value falls outside the range of certified values, then the PD is determined from either the upper or lower limit of the range. See Battelle SOP 7-029.
[c] Method 1613B Table 6 Ongoing Precision and Recovery (OPR) requirements not applicable if lower-level OPR prepared.
RL = Reporting Limit; EML = Estimated Minimum Level

Table 5. Achieved MDLs and Project QL Goals in Lobster Tissues.

Parameter	Achieved MDL	Project QL[a]	Parameter	Achieved MDL	Project QL[a]
Trace Metals (µg/g wet)			**Pesticides (ng/g wet)**		
Arsenic	0.1	0.318	2,4-DDD	0.027	0.086
Beryllium	0.004	0.013	2,4-DDE	0.091	0.289
Cadmium	0.178	0.566	2,4-DDT	0.033	0.105
Chromium	0.24	0.763	4,4-DDD	0.04	0.127
Copper	0.065	0.207	4,4-DDE	0.035	0.111
Lead	0.02	0.064	4,4-DDT	0.025	0.080
Mercury	0.002	0.006	Aldrin	0.023	0.073
Nickel	0.286	0.909	cis-Chlordane	0.021	0.067
Selenium	0.4	1.272	Dieldrin	0.025	0.080
Silver	0.054	0.172	Endosulfan I	0.033	0.105
Zinc	0.096	0.305	Endosulfan II	0.049	0.156
Organotins (ng/g wet)			Endosulfan sulfate	0.052	0.165
Monobutyltin	0.35	1.11	Endrin	0.017	0.054
Dibutyltin	0.88	2.80	g- BHC	0.03	0.095
Tributyltin	1.44	4.58	Heptachlor	0.027	0.086
Tetrabutyltin	1.23	3.91	Heptachlor epoxide	0.019	0.060
PCBs (ng/g wet)			Hexachlorobenzene	0.040	0.127
PCB 8	0.318	1.01	Mirex	0.038	0.121
PCB 18	0.034	0.108	Toxaphene	N/A	N/A
PCB 28	0.045	0.143	trans-Nonachlor	0.023	0.073
PCB 44	0.030	0.095	**Dioxins/Furans (pg/g wet)**		
PCB 52	0.023	0.073	2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.34	1.08
PCB 66	0.029	0.092	2,3,7,8-Tetrachlorodibenzofuran	0.38	1.21
PCB 101	0.023	0.073	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	3.9	12.40
PCB 105	0.042	0.134	1,2,3,7,8-Pentachlorodibenzofuran	3.1	9.86
PCB 118	0.036	0.114	2,3,4,7,8-Pentachlorodibenzofuran	2.2	7.00
PCB 128	0.088	0.280	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	3.8	12.08
PCB 138	0.037	0.118	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	5.5	17.49
PCB 153	0.067	0.213	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	2.5	7.95
PCB 170	0.036	0.114	1,2,3,4,7,8-Hexachlorodibenzofuran	3.0	9.54
PCB 180	0.037	0.118	1,2,3,6,7,8-Hexachlorodibenzofuran	1.5	4.77
PCB 187	0.040	0.127	1,2,3,7,8,9-Hexachlorodibenzofuran	2.7	8.59
PCB 195	0.036	0.114	2,3,4,6,7,8-Hexachlorodibenzofuran	3.0	9.54
PCB 206	0.033	0.105	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1.9	6.04
PCB 209	0.036	0.114	1,2,3,4,6,7,8-Heptachlorodibenzofuran	3.2	10.18
PAHs (ng/g wet)			1,2,3,4,7,8,9-Heptachlorodibenzofuran	2.5	7.95
Acenaphthene	0.022	0.070	Octachlorodibenzo-p-dioxin	3.9	12.40
Acenaphthylene	0.02	0.064	Octachlorodibenzofuran	35.6	113.21
Anthracene	0.016	0.051	**Dioxin-Like PCBs (pg/g wet)**		
Benzo(a)anthracene	0.017	0.054	PCB77	74.2	236.0
Benzo(a)pyrene	0.023	0.073	PCB81	47.9	152.3
Benzo(b)fluoranthene	0.017	0.054	PCB105	306.2	973.7
Benzo(g,h,i)perylene	0.012	0.038	PCB114	64.0	203.5
Benzo(k)fluoranthene	0.02	0.064	PCB118	930.7	2959.6
Chrysene	0.024	0.076	PCB123	124.3	395.3
Dibenz(a,h)anthracene	0.016	0.051	PCB126	34.3	109.1
Fluoranthene	0.207	0.658	PCB156	66.8	212.4
Fluorene	0.027	0.086	PCB157	66.8	212.4
Indeno(1,2,3-c,d)pyrene	0.009	0.029	PCB167	61.1	194.3

Table 5 (cont'd).

Parameter	Achieved MDL	Project QL[a]	Parameter	Achieved MDL	Project QL[a]
Naphthalene	0.423	1.345	PCB169	47.1	149.8
Phenanthrene	0.164	0.522	PCB189	35.5	112.9
Pyrene	0.135	0.429	**Lipids (% wet)**	0.1	N/A
Bis(2-ethylhexyl)phthalate	N/A	N/A	**Percent Moisture (% wet)**	0.1	N/A

[a] The Project QL Goal = 3.18 X Target Laboratory MDL (Battelle, 2001a).

Precision

Analytical precision was determined using the results from laboratory duplicate samples (matrix spikes [MS/MSD] and laboratory duplicates [DUP]), with the relative percent differences (RPD). Target RPDs are provided in Table 5.

Completeness

The completeness of chemical analyses was ensured by comparing the chain-of-custody forms received by the laboratory with the list of samples analyzed.

2.6 Deviations from the QAPP

There were no deviations from the planned scope of work or survey methods defined in the field survey plan.

The pesticide/PCB sample extracts for the lobster meat sample from Site 69B and one of the lobster hepatopancreas samples from Site 16 were analyzed outside the defined holding time of 40-days for extract analysis. Sample extracts were stored in a refrigerator (4°C) in the dark until analysis was performed. The recovery of surrogate compounds in these two samples was within the acceptance criteria, and the holding time exceedance was not expected to affect the accuracy of sample results. The associated sample results were "T" flagged.

The PAH analytical data were "J" flagged using the sample-specific reporting limit (RL) as the upper limit rather than the Project QL Goal, as was done for the other analytical data.

Organotin analysis was not performed on lobster hepatopancreas samples. The decision was made based on the poor historical recovery of butyltins in this high lipid, complex matrix. The method employed was not designed to recover the target compounds in this type of matrix.

2.7 General Data Treatment and Reduction

This section describes the data reduction performed on the Summer 2002 lobster data.

Specifics of data handling are as follows:

- All chemical data were generated by Battelle and qualified when necessary (Table 6). Data were loaded directly into the project database.

- All data were extracted directly from the database and exported into Excel files, where graphical presentations were performed.
- Contaminant data were reported by sample and averaged by species.
- Total PCB was calculated as the sum of the 18 NOAA's NS&T PCB congeners (Table 1).
- Total DDT was calculated as the sum of six DDT-related compounds: 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT (Table 1).
- Total chlordane was calculated as the sum of four compounds: cis-Chlordane, Heptachlor, Heptachlor epoxide, and trans-Nonachlor (Table 1).
- Total PAH was calculated as the sum of the 16 priority pollutant PAHs (Table 1).
- When calculating totals or means using individual analytes, ½ the MDL was used for compounds that were not detected and qualified with a "U" qualifier.

Data qualifiers used for the Rhode Island Sound tissue analysis are defined in Table 6.

Table 6. Data Qualifiers.

Qualifier	Definition
B	Compound present in study sample at level <10 times blank value
C and C156	PCB 156 and PCB 157 coelute when analyzed by high-resolution mass spectrometry (HRMS). Data for both compounds are reported as PCB156.
f	Compounds quantified but were below the MDL
F	Result obtained from second column confirmation analysis
J	Compound quantified above the MDL but were below the Project QL Goal
K	Contaminant data blank corrected
R	Data rejected due to QC exceedances
T	Holding time exceeded
U	Compound not detected; MDL reported as the value, and ½ the MDL used when calculating totals (i.e. Total PCB and Total DDT)

3.0 RESULTS

3.1 Lobsters Collected

Throughout the period of deployment and recovery during the Summer 2002 lobster survey, fair weather and seas occurred and enhanced survey operations. All trawls and traps were recovered according to plan and schedule. Table 7 summarizes all lobster data by site in terms of trap type, lobster counts, sex, average carapace length, and percent chitinoclasia. Figure 3 presents catch per unit effort by trap type and by site. Raw data by site and trap type for individual lobsters collected during the study are presented in Appendix A.

A total of 949 lobsters were collected during the study: 594 (63%) were females and 355 (37%) were males. A total of 798 lobsters (483 female and 315 male) were captured in the unvented

traps averaging ~13.3 lobsters per trap. In the vented traps, 151 lobsters (111 female and 40 male) were captured averaging ~2.52 lobsters per trap. A total of 24 V-notched females were collected in the entire catch, 5 specimens at Site 69B, 7 specimens at 69A, 6 specimens at Site 16, and 6 specimens at Site 18.

Catch per unit effort (CPUE) is calculated as the number of lobsters collected per lobster trap and is used for comparisons of lobsters between sites as opposed to the total number of lobsters. Mean CPUE for Sites 16, 18, 69A and 69B is presented in Figure 2 for vented traps, unvented traps, and all traps combined. As anticipated, CPUE is higher for unvented traps than vented traps because lobsters cannot escape from unvented traps. Mean CPUE in unvented traps ranged from 11.7 lobsters/trap at Site 16 to 16.3 lobsters/trap at Site 69A, whereas mean CPUE in vented traps ranged from 1.7 lobsters/trap at Site 16 to highs of 2.9 lobsters/trap at Sites 18 and 69A. The number of lobsters collected during this survey did not vary significantly between sites (ANOVA $p > 0.05$). Mean CPUE in all traps ranges from 6.7 lobsters/trap at Site 16 to 9.6 lobsters/trap at Site 69A.

Table 7. Summary of Lobster Data (by Site) Collected During the Summer 2002 Lobster Survey.

Site ID	Trap Type (Vented/Non-Vented)	Lobsters per Trawl (No.)	Females (No.)	Males (No.)	Average Carapace Length (mm)	Carapace Length Standard Deviation (mm)	Shell Disease (No. lobsters)	Shell Disease (% lobsters)
16	Unvented	175	118	57	73	8	64	37
16	Vented	26	21	5	82	7	12	46
Site 16 Totals	***NA***	***201***	***139***	***62***	***74***	***8***	***76***	***39***
18	Unvented	206	132	74	74	7	63	31
18	Vented	44	35	9	80	7	25	57
Site 18 Totals	***NA***	***250***	***167***	***83***	***75***	***7***	***88***	***35***
69A	Unvented	245	144	101	74	7	70	29
69A	Vented	42	24	18	78	9	14	33
Site 69A Totals	***NA***	***287***	***168***	***119***	***75***	***7***	***84***	***29***
69B	Unvented	172	89	83	73	7	42	24
69B	Vented	39	31	8	77	9	15	38
Site 69B Totals	***NA***	***211***	***120***	***91***	***74***	***7***	***57***	***27***
All Sites Totals	***ALL***	***949***	***594***	***355***	***75***	***7***	***305***	***32***

NA= Not applicable.

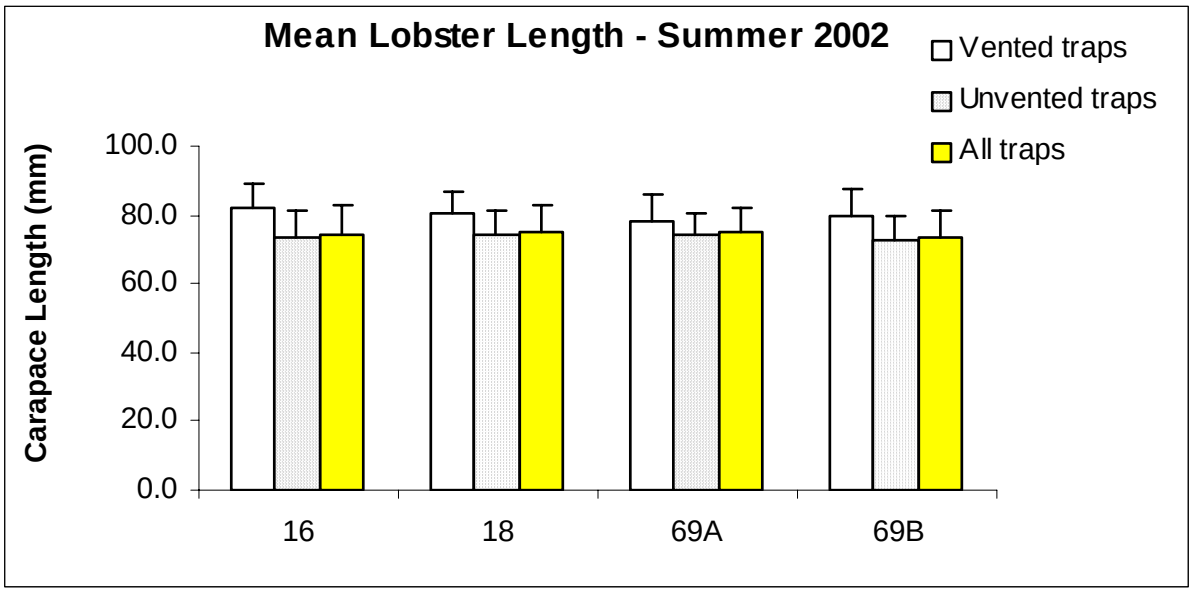


Figure 3. Mean Lengths of Lobsters Harvested From Sites 16, 18, 69A, and 69B During the Summer 2002 Lobster Survey in Rhode Island Sound.

Carapace length (CL) of lobsters collected in this study ranged from 54 to 97 mm. The mean carapace length for all lobsters was 74.6 ± 7.4 mm. Little variation in mean carapace length was observed between sites (Figure 3). Individual lobsters ranged in size from 54 to 89 mm at Site 69B, 55 to 88 mm at Site 69A, 55 to 91 mm at Site 16, and 54 to 97 mm at Site 18. Mean carapace length for all lobsters was larger in vented traps (78.9 mm) than in unvented traps (73.8 mm) because small adults and juveniles are able to escape from the vented traps. The smallest overall mean lengths were observed in unvented traps from Site 69B (mean CL = 72.6 mm) and Site 16 (mean CL = 73.3 mm). The largest overall mean lengths were observed in vented traps from Site 16 (mean CL = 81.3 mm) and Site 18 (mean CL = 80.3 mm).

3.2 Morphology/Pathology

Chitinoclasia (shell disease) lesions were evident on almost one-third of the specimens (305 individuals) collected, approximately 32% (this included all diseased individuals as well as those with scars only and no sign of active disease). Almost all occurrences of diseased individuals (99 specimens) fell within shell disease Category 1 (1 to10% coverage range), 23 occurrences fell within Category 2 (11 to 50% coverage range), and only 4 occurrences fell within Category 3 (> 50% coverage range). There were 173 occurrences of old shell disease scars but no evidence of new disease. Most of the diseased individuals were females because they tend to molt less than males and their shells receive a greater period of exposure.

3.3 Spatial Comparison of Tissue Contaminants

The body burdens of contaminants were determined for edible tissue (lobster meat) and hepatopancreas for lobsters during the Summer 2002 lobster survey. Results of these analyses

are reported in Tables 8 (edible tissue) and 9 (hepatopancreas) and in Appendix B. Quality control sample results, including the data quality objectives for this project, are summarized in the Quality Assurance/Quality Control Summaries (Appendix B).

3.3.1 Edible Tissue (Tail and Claw Meat)

Moisture Content

Moisture content in lobster meat samples was very similar among the four study areas. Percent moisture ranged from 81.8% (at Site 69B) to 85.8% (at Site 18).

Lipid Content

Lipid content in lobster meat samples was very similar among the four study areas. Lipid content ranged from 0.71% (at Site 18) to 0.89% (at Site 69B).

Table 8. Summary of Contaminant Concentrations (Wet Weight) in Lobster Edible Tissue Collected in Summer 2002.

		Site 16 (n = 3)			Site 18 (n = 1)		Site 69A (n = 1)		Site 69B (n = 1)	
Parameter	**Units (wet wt)**	**Mean Conc.**	**SD**	**Q**	**Conc.**	**Q**	**Conc.**	**Q**	**Conc.**	**Q**
Moisture	% wet	83.54	0.94		85.79		83.29		81.76	
Lipid	% wet	0.79	0.06		0.71		0.87		0.89	
Aldrin	ng/g	0.01	0	U	0.02	U	0.02	U	0.05	UT
Dieldrin	ng/g	0.28	0.04		0.31		0.24		0.34	T
Heptachlor	ng/g	0.01	0	U	0.02	U	0.02	U	0.06	UT
Heptachlor Epoxide	ng/g	0.03	0	J	0.03	J	0.04	J	0.03	fT
Mirex	ng/g	0.02	0.01	f	0.02	f	0.02	f	0.08	UT
Total Chlordane	ng/g	0.15	0.04		0.15		0.18		0.14	
Total DDD	ng/g	0.03	0		0.03		0.03		0.07	
Total DDE	ng/g	0.74	0.19		0.55		0.56		0.81	
Total DDTs	ng/g	0.79	0.19		0.6		0.61		0.93	
Total PCB	ng/g	7.76	1.8		5.51		5.12		7.15	
Total PAH	ng/g	3.05	0.69		1.67		2.12		1.77	
Bis(2-ethylhexyl)phthalate	ng/g	11.56	6.93	B	8.33	B	5.44	f	8.99	B
Tributyltin	ng/g	0.7	0.04	f	0.69	f	0.54	f	0.54	f
Total Dioxin	pg/g	2.71	0.5		4.19		6.13		3.49	
Total Furan	pg/g	3.49	0.58		5.86		4.69		4.23	
PCB 77	pg/g	34.62	6.33	f	20.64	f	32.68	f	18.4	f
PCB 126	pg/g	9.41	1.44	f	10.7	f	8.4	f	8.49	f
Arsenic	ug/g	6.75	0.39		5.99		7.41		7.28	
Beryllium	ug/g	0.0023	0.003		0.0151	U	0.0151	U	0.0151	U
Cadmium	ug/g	0.03	0.01	J	0.02	J	0.02	J	0.02	J
Chromium	ug/g	0.686	0.066	B	0.549	B	0.789	B	0.785	B
Copper	ug/g	19.74	4.32		18.46		27.75		21.11	
Lead	ug/g	0.0147	0.0042		0.0119		0.0122		0.0141	
Mercury	ug/g	0.14	0.016		0.122		0.131		0.159	
Nickel	ug/g	0.063	0.004	J	0.076	J	0.058	J	0.082	J
Selenium	ug/g	0.439	0.037		0.332		0.488		0.495	
Silver	ug/g	0.46	0.096		0.415		0.534		0.409	
Zinc	ug/g	24.59	1.51		20.95		24.09		23.52	

Conc. = Concentration
SD = Standard Deviation
Q = Qualifier
U – Compound not detected; MDL reported as the value, and ½ the MDL used when calculating totals (i.e. Total PCB and Total DDTs) or means.
J – Compound quantified above the MDL but were below the Project QL Goal.
f – Compounds quantified but were below the MDL.
B – Compound present in study sample at level <10 times blank value.
T – Holding time exceeded.

Table 9. Summary of Contaminant Concentrations (Wet Weight) in Lobster Hepatopancreas Collected in Summer 2002.

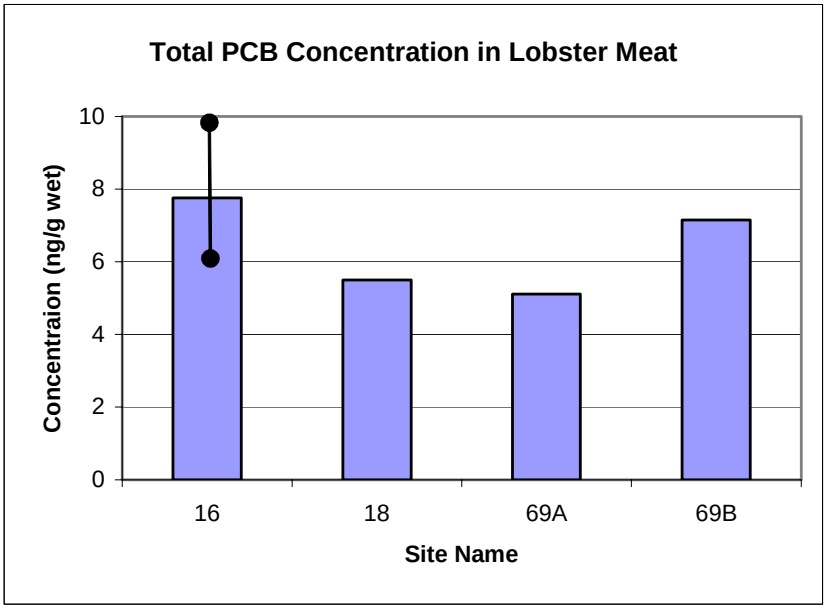
		Site 16 (n = 3)			Site 18 (n = 1)		Site 69A (n = 1)		Site 69B (n = 1)	
Parameter	**Units (wet wt)**	**Mean Conc.**	**SD**	**Q**	**Conc.**	**Q**	**Conc.**	**Q**	**Conc.**	**Q**
Moisture	% wet	76.71	3.89		69.31		69.46		71.01	
Lipid	% wet	10.94	1.75		14.05		17.6		14.63	
Aldrin	ng/g	0.07	0.04	UT	0.05	U	0.06	U	0.06	U
Dieldrin	ng/g	3.55	2.83	T	2.95		2.36		2.32	
Heptachlor	ng/g	0.06	0.02	UT	0.06	U	0.06	U	0.06	U
Heptachlor Epoxide	ng/g	0.92	0.58		1.76		1.76		1.95	
Mirex	ng/g	0.76	0.51	UT	0.99		1.49		1.77	
Total Chlordane	ng/g	6.07	1.29		7.87		7.69		6.06	
Total DDD	ng/g	0.11	0.06		0.08		0.08		0.08	
Total DDE	ng/g	87.6	76.41		49.67		68.01		59.46	
Total DDTs	ng/g	88.83	77.18		49.82		69.49		60.92	
Total PCB	ng/g	721.23	489.29		434.01		517.23		389.63	
Total PAH	ng/g	78.23	38.14		55.14		75.46		44.43	
Bis(2-ethylhexyl)phthalate	ng/g	26.83	9.44	B	20.44	B	30.15	B	23.03	B
Tributyltin	ng/g	NA	NA		NA		NA		NA	
Total Dioxin	pg/g	40.68	14.15		23.51		42.8		46.98	
Total Furan	pg/g	150.11	30.51		117.01		185.96		118.9	
PCB 77	pg/g	2,459.11	581.89		1,989.42		2,780.92		1,820.57	
PCB 126	pg/g	718.28	136.06		553.14		856.51		524.57	
Arsenic	ug/g	9.28	0.87		10.77		9.23		8.25	
Beryllium	ug/g	0.0054	0.0027	f	0.0025	f	0.0015	f	0.0007	f
Cadmium	ug/g	7.54	2.88		8.59		5.45		5.17	
Chromium	ug/g	1.064	0.183	B	1.449	B	1.251	B	0.96	B
Copper	ug/g	501.53	92.39		568.85		298.61		444.67	
Lead	ug/g	0.0496	0.0067		0.0576		0.0533		0.0503	
Mercury	ug/g	0.113	0.015		0.18		0.118		0.089	
Nickel	ug/g	0.479	0.066		0.586		0.563		0.416	
Selenium	ug/g	0.935	0.045		0.916		1.024		0.77	
Silver	ug/g	12.247	2.554		13.267		9.591		9.987	
Zinc	ug/g	30.9	6.64		30.69		35.17		26.34	

Conc. = Concentration
SD = Standard Deviation
Q = Qualifier
U – Compound not detected; MDL reported as the value, and ½ the MDL used when calculating totals (i.e. Total PCB and Total DDTs) or means.
J – Compound quantified above the MDL but were below the Project QL Goal.
f – Compounds quantified but were below the MDL.
B – Compound present in study sample at level <10 times blank value.
T – Holding time exceeded.

Pesticides/PCBs

Most of the pesticides were undetected in lobster meat samples from the four study sites. Cis-chlordane, dieldrin, g-BHC, heptachlor epoxide, hexachlorobenzene, mirex, trans-nonachlor, 4,4-DDT, and 4,4-DDE were detected in the meat samples at concentrations below the Project QL Goal for these compounds. Detected pesticide concentrations were very similar among the four sites. Total DDT concentrations ranged from 0.59 to 1.03 ng/g, and concentrations of total chlordane ranged from 0.13 to 0.22 ng/g at Site 16, which also were the minimum and maximum values, respectively, measured across the four sites.

PCB 8 and PCB 44 were not detected in any of samples from the four sites. PCB 153 and PCB 138 were detected in some of the samples at concentrations above the Project QL Goal. Total PCB concentrations ranged from 5.12 to 10.65 ng/g across the four sites (Figure 4).

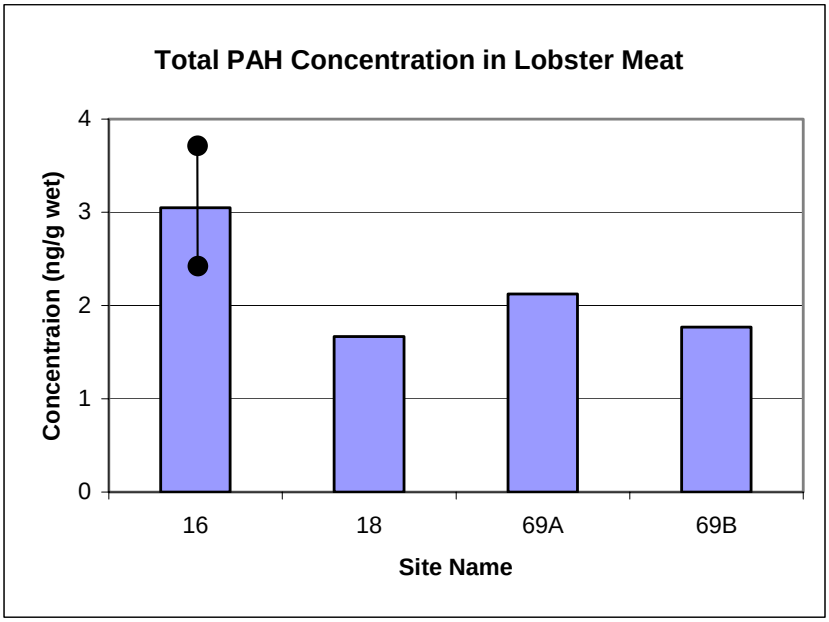


Note: Error bar for Site 16 is the standard deviation.

Figure 4. Total PCB Concentrations in Lobster Meat at Sites 16, 18, 69A, and 69B.

PAHs/Phthalate

Most of the 16 priority pollutant PAHs were detected in the lobster meat samples from Site 16 and the rest of three sites at concentration levels less than the reporting limit (RL) or the method detection limit (MDL). Total PAH concentrations, calculated as the total of the 16 priority pollutant PAHs, ranged from 2.36 to 4.00 ng/g at Site 16 and from 1.67 to 2.12 ng/g at the rest of three sites (Figure 5). The average total PAH concentration was slightly higher in Site 16 (3.05 ± 0.69 ng/g) than in the rest of three sites (1.85 ± 0.24 ng/g).



Note: Error bar for Site 16 is the standard deviation.

Figure 5. Total PAH Concentrations in Lobster Meat at Sites 16, 18, 69A, and 69B.

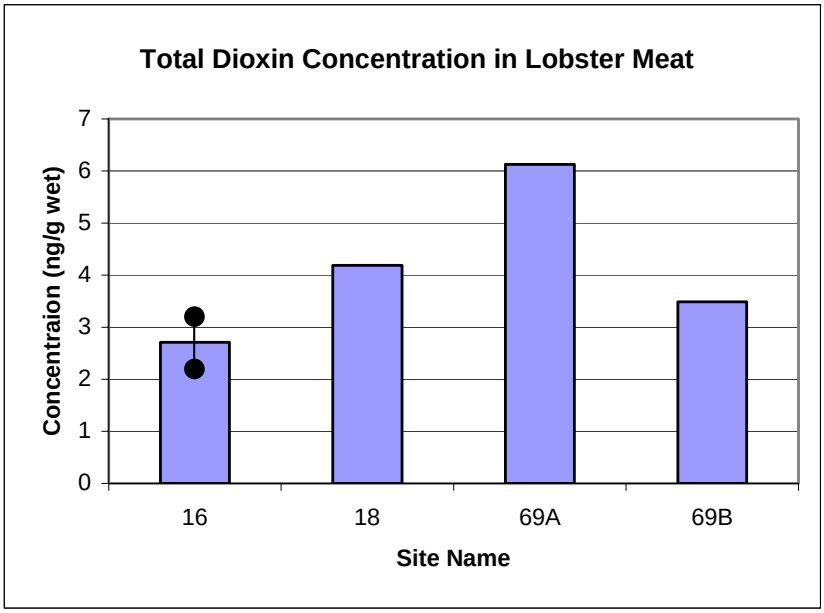
Organotins

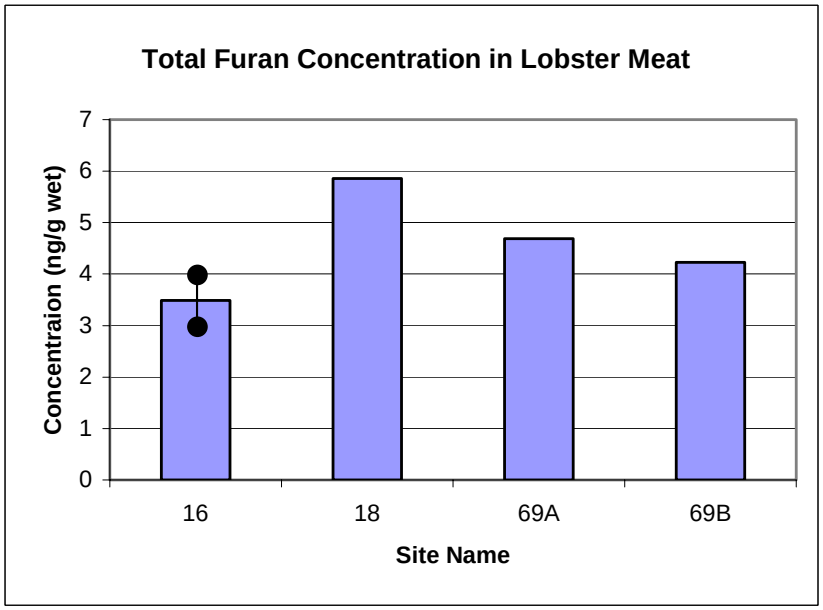
Monobutyltin and tetrabutyltin were not detected in any of the meat samples from any of the four sites. Dibutyltin and tributyltin were detected at trace levels (below MDL for most of the samples). Dibutyltin concentrations ranged from 0.52 to 1.11 ng/g at Site 16 and 0.56 to 0.74 ng/g at the rest of three sites. Tributyltin concentrations ranged from 0.63 to 0.74 ng/g at Site 16 and 0.54 to 0.69 ng/g at the rest of three sites.

Dioxins/Furans and 12 Dioxin-like PCB Congeners

Nine dioxin/furan compounds were detected in lobster meat samples from Site 16, whereas a total of 15 dioxin/furan compounds were detected at the other three sites. Concentrations of all detected compounds were below the Project QL Goal. Concentrations of 2,3,7,8-TCDD and 1,2,3,7,8-PeCDD (the two most toxic dioxin compounds) were just slightly above the Estimated Detection Limit (EDL) at Site 69A but were not detected at Sites 18 and 69B. 2,3,7,8-TCDD was detected in two of the five replicate samples at Site 16 below EDL, and 1,2,3,7,8-PeCDD was not detected in any of the five samples at Site 16. The concentration of total dioxin was highest at Site 69A, and the concentration of total furan was highest at Site 18 (Figure 5).

All of the 12 dioxin-like PCB congeners, except one (PCB 169), were detected in lobster meat samples from Sites 18, 69A, and 69B at concentrations generally either below the EDL or below the RL. PCB 169 was detected in one of the five replicate samples at Site 16, and not detected at all in the rest of the three sites. Detected concentrations of PCB 77, 81, 114, 123, 126, 169, and 189 were below the EDL. Concentrations were fairly similar at the sites but were slightly higher at Site 16 than at the rest of the three sites.





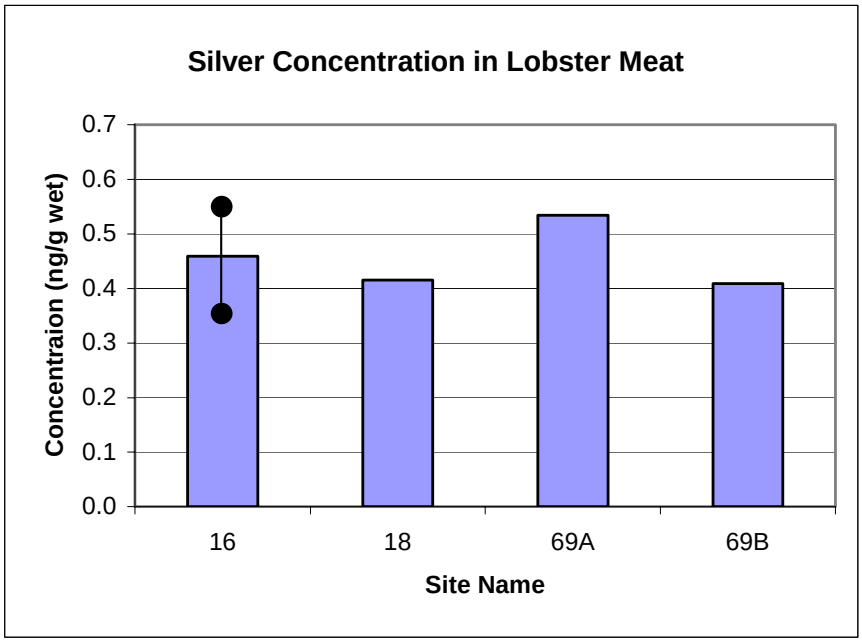
Note: Error bar for Site 16 is the standard deviation.

Figure 6. Total Dioxin and Total Furan Concentrations in Lobster Meat at Sites 16, 18, 69A, and 69B.

Metals

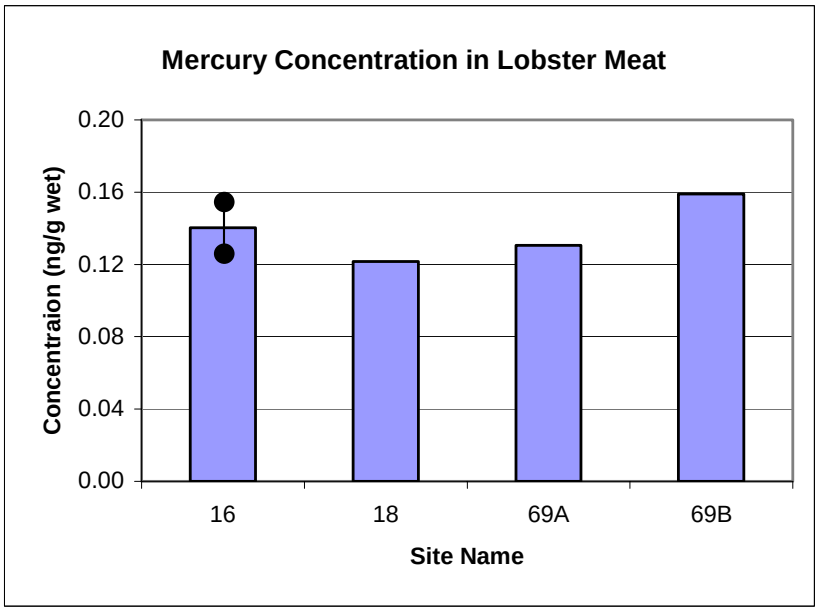
Be was detected in four of the five replicate lobster meat samples at Site 16 at levels less than the MDL and was not detected in any of the meat samples from the rest of the three sites. The most abundant metals detected were Zn and Cu. Concentrations of Cu ranged from 15.23 µg/g in one of the Site 16 samples to 27.75 µg/g at Site 69A. Concentrations of Zn ranged from 20.95 µg/g at Site 18 to 27.25 µg/g at Site 16 sample. In general, metal concentrations were fairly similar at all the sites. Samples from Site 16 contained the highest concentrations of Cd (0.04 ug/g), Ag

(0.589 ug/g), and Zn (27.25 ug/g) (Figure 7). The sample from Site 69A contained the highest concentrations of As (7.41 ug/g), Cr (0.789 ug/g), and Cu (27.75 ug/g). The sample from Site 69B contained the highest concentrations of Hg (0.159 ug/g), Ni (0.082 ug/g), and Se (0.495 ug/g) (Figure 8).



Note: Error bar for Site 16 is the standard deviation.

Figure 7. Silver Concentrations in Lobster Meat at Sites 16, 18, 69A, and 69B.



Note: Error bar for Site 16 is the standard deviation.

Figure 8. Mercury Concentrations in Lobster Meat at Sites 16, 18, 69A, and 69B.

3.3.2 Lobster Hepatopancreas

Moisture Content

Moisture content in hepatopancreas samples was more variable among the four study areas than in meat samples. Percent moisture values ranged from 69.31% (at Site 18) to 83.33% (at Site 16).

Lipid Content

Similar to moisture content, lipid content in hepatopancreas samples was more variable among the four study areas than in meat samples. Lipid content values ranged from 8.65% (at Site 16) to 17.60% (at Site 69A).

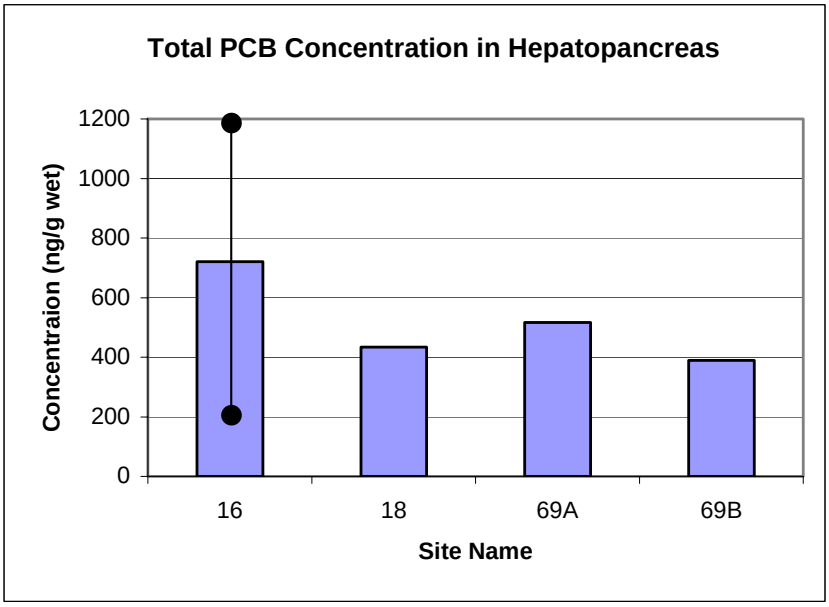
Pesticides/PCBs

Most of the pesticides were undetected in lobster hepatopancreas samples from the four study sites. Dieldrin and trans-nonachlor were detected in some of the hepatopancreas samples at concentrations above the Project QL Goal. Concentrations were similar among the four sites, with the exception of one of the five samples from Site 16 (Battelle Sample ID V7408-R1), which exhibited a much higher concentration than the rest of the samples. 4,4-DDE was detected in all of the hepatopancreas samples from the four sites at concentrations above the Project QL Goal, ranged from 30.28 to 220.56 ng/g. Concentrations of Total DDTs ranted from 30.78 to 223.27 ng/g at Site 16, which were also the minimum and maximum values, respectively, measured across the four sites. Concentrations of total chlordane ranged from 4.92 ng/g at Site 16 to 7.87 at Site 18. 4,4-DDD, 2,4-DDD, 2,4-DDE, 2,4-DDD, aldrin, endosulfan I, endosulfan II, endosulfan sulfate, endrin, heptachlor and toxaphene were undetected in all of the hepatopancreas composite samples from the four sites.

Concentrations of target PCB compounds were much higher in hepatopancreas than in meat samples. PCB 8 and PCB 44 were not detected in any of the samples from the four sites. The remaining PCB congeners were detected at concentrations greater than the Project QL Goal. The most abundant PCBs detected were PCB 118, PCB 138, PCB 153, PCB 180 and PCB187. Total PCB concentrations ranged from 298.50 to 1542.79 ng/g at Site 16, which also were the minimum and maximum values, respectively, measured across the four sites (Figure 9).

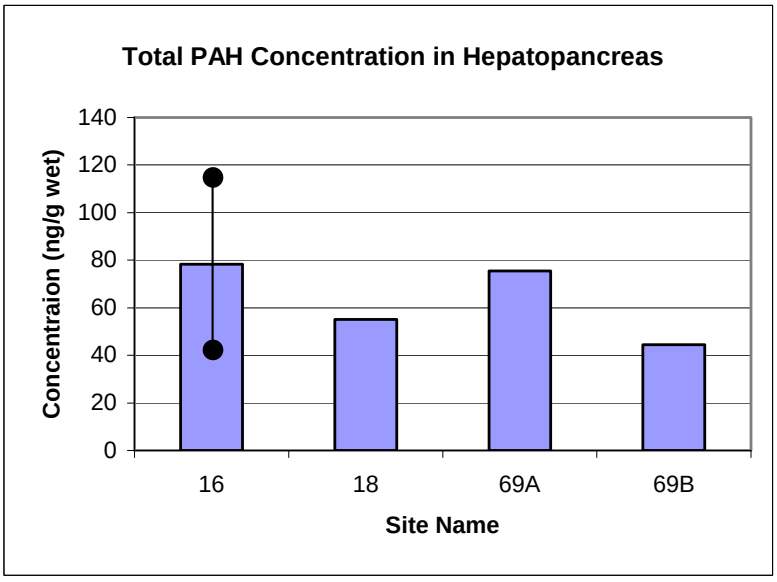
PAHs/Phthalate

Target PAH and phthalate compounds were detected in all of the hepatopancreas samples, and exhibited relatively higher concentrations in hepatopancreas than in meat samples. Concentrations of total PAH ranged from 49.65 to 143.91 ng/g at Site 16 and from 44.43 to 75.46 ng/g at the rest of three sites (Figure 10). The most abundant PAHs detected were benzo(a)anthracene, fluoranthene and pyrene. Bis(2-ethylhexyl)phthalate was detected at concentrations less than 10 times the procedural blank concentrations in hepatopancreas samples from all sites.



Note: Error bar for Site 16 is the standard deviation.

Figure 9. Total PCB Concentrations in Lobster Hepatopancreas at Sites 16, 18, 69A, and 69B.



Note: Error bar for Site 16 is the standard deviation.

Figure 10. Total PAH Concentrations in Lobster Hepatopancreas at Sites 16, 18, 69A, and 69B.

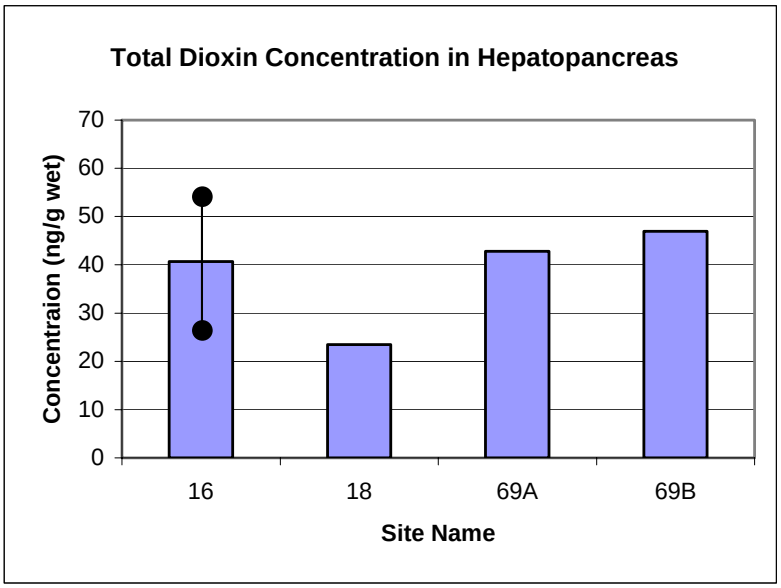
Organotins

No organotins analysis was performed for hepatopancreas samples.

Dioxins/Furans and 12 Dioxin-like PCB Congeners

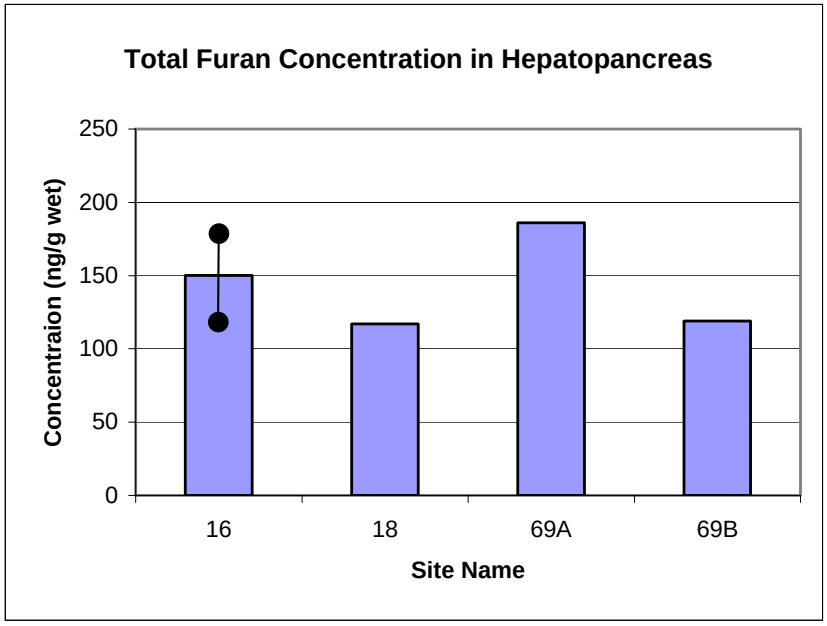
Concentrations of the detected dioxins/furans and 12 dioxin-like PCB congeners were generally higher in hepatopancreas samples than in meat samples. 17 of the dioxin/furan compounds were detected in the hepatopancreas samples from Site 16 and Site 69B, and 15 compounds were detected from Site 18 and Site 69A. 1,2,3,4,6,7,8-HpCDD, 1,2,3,6,7,8-HxCDD, 2,3,7,8-TCDF, OCDD, 1,2,3,7,8-PeCDD and 2,3,7,8-TCDD (the two most toxic dioxin compounds) were detected above the Project QL for most of the samples at all sites. 1,2,3,7,8,9-HxCDD was detected above the Project QL at Site 16 and Site 69A. Total dioxin concentrations ranged from 2.22 pg/g (at Site 16) to 57.72 (at Site 16) (Figure 11). Total furan concentrations ranged from 109.85 pg/g at Site 16 to 194.28, also at Site 16 (Figure 12).

All of the 12 dioxin-like PCB congeners were detected in hepatopancreas samples from the four sites, with the exception of PCB 169 at Site 18. Most of the 12 dioxin-like PCB congeners were present at concentrations greater than the Project QL Goal, except for PCB 169 at Sites 18, 69A, and 69B, and PCB 81 at all four sites. Concentrations were fairly similar at the sites but were slightly higher at Site 16 than at the rest of three sites.



Note: Error bar for Site 16 is the standard deviation.

Figure 11. Total Dioxin Concentrations in Lobster Hepatopancreas at Sites 16, 18, 69A, and 69B.

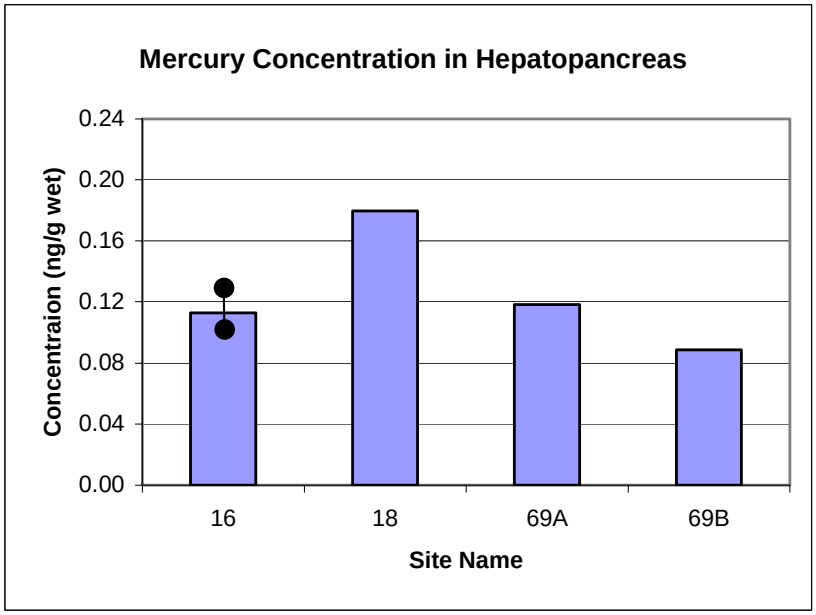


Note: Error bar for Site 16 is the standard deviation.

Figure 12. Total Furan Concentrations in Lobster Hepatopancreas at Sites 16, 18, 69A, and 69B.

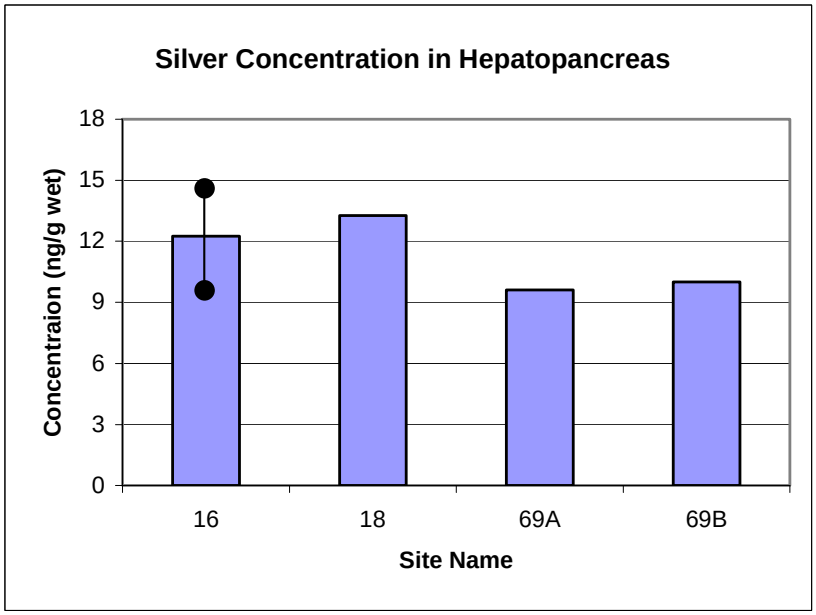
Metals

The trace metals did not demonstrate a clear spatial pattern among the four study sites, though metals concentrations were generally higher in hepatopancreas than in meat samples. Be was detected at concentrations below the MDL in the hepatopancreas samples from all four sites. All other metals were detected at concentrations greater than the Project QL Goal. Be, Cd, Cu, Pb, Hg and Zn concentrations were highest in the hepatopancreas samples from Site 16 (Figure 13). Hepatopancreas samples at Site 18 contained the highest concentrations of As, Cr, Ni and Ag (Figure 14); chromium levels at all four sites were detected at concentrations less than 10 times the method blank levels. The highest concentration of Se was in the hepatopancreas samples from Site 69A. In general, metal concentrations in hepatopancreas samples were fairly similar at all the sites.



Note: Error bar for Site 16 is the standard deviation.

Figure 13. Mercury Concentrations in Lobster Hepatopancreas at Sites 16, 18, 69A, and 69B.



Note: Error bar for Site 16 is the standard deviation.

Figure 14. Silver Concentrations in Lobster Hepatopancreas at Sites 16, 18, 69A, and 69B.

4.0 CONCLUSIONS AND DISCUSSION

The Summer 2002 lobster survey was completed successfully, with the collection and analysis of lobster meat and hepatopancreas samples from Sites 16, 18, 69A, and 69B. Results in this report document the baseline lobster abundance and diversity and contaminant body burden of lobster from Rhode Island Sound during Summer 2002 in the vicinity of Sites 16, 18, 69A, and 69B.

4.1 Sampling

Sampling was successful. No schedule problems were experienced and no technical problems were reported.

4.2 Contaminant Body Burdens

In general, concentrations of organic and inorganic contaminants in edible tissue from lobster collected in the vicinity of Sites 16, 18, 69A, and 69B were low, with most organic contaminants being detected either below the MDL or below the Project QL Goal. There was no clear spatial trend for tissue or hepatopancreas contaminant concentrations among the four study sites, with concentrations being fairly similar (i.e., within one order of magnitude) across sites. Results of the five replicate composite samples from Site 16 were very similar in lobster meat samples, but relatively variable in hepatopancreas samples.

As expected, the concentrations of contaminants in hepatopancreas samples were greater than in edible tissue. The concentrations of total PAH, bis(2-ethyhexyl)phthalate, total dioxin, total furan, dioxin-like PCBs, total PCBs and total DDTs in hepatopancreas samples were highest in one of the samples from Site 16. Trace metal concentrations did not demonstrate a clear spatial pattern among the three study sites, but most metals were detected at concentrations greater than the Project QL Goal.

4.3 Relationship of Contaminant Levels to FDA Legal Limits

The U.S. Food and Drug Administration (FDA) has set action limits for the maximum tissue concentrations of specific contaminants in the edible portions of fish and fishery products (FDA, 1989). The Summer 2002 individual concentrations of target analytes in lobster edible meat composite were compared to the FDA's Action Limits (Table 10). All lobster meat chemical concentrations were well below FDA Action Levels by one or more orders of magnitude.

Table 10. Comparison of Summer 2002 Lobster Meat Concentrations (on a Wet Weight Basis) to FDA Action Levels for Selected Parameters.

Station	Total PCB (ng/g)	Total DDT (ng/g)	Total Chlordane[a] (ng/g)	Aldrin (ng/g)	Dieldrin (ng/g)	Heptachlor (ng/g)	Heptachlor Epoxide (ng/g)	Mirex (ng/g)	Mercury (µg/g)
16[b]	7.76	0.79	0.15	0.01	0.28	0.01	0.03	0.02	0.14
18	5.51	0.60	0.15	0.02	0.31	0.02	0.03	0.02	0.12
69A	5.12	0.61	0.18	0.02	0.24	0.02	0.04	0.02	0.13
69B	7.15	0.93	0.14	0.05	0.34	0.06	0.03	0.08	0.16
FDA Limit	2000	5000	300	300	300	300	300	100	1

[a] Total chlordane reported for lobster meat is the sum of cis-Chlordane, Heptachlor, Heptachlor epoxide, and trans-Nonachlor; total chlordane for FDA Limit is the sum of cis Chlordane and trans-Nonachlor, as described in FDA (1989).
[b] Concentration reported for Site 16 is the mean of five replicate composites.

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APPENDIX A

Sample Processing Data for Lobster Collected at Each of the Four Study Sites

Table A-1. Summary of Data on Individual Lobsters Collected During the Summer 2002 Lobster Survey.

Sample ID	Study	Survey	Site	Trawl No.	Trap No.	Sample No.	Sex	Carapace length (mm)	External Disease % /Category	Pot Type	Tissue Chemistry	Comments
RIS1L69B001	RIS	1L	69B	3	1	001	M	76	0	Non-Vented		Hard Shell
RIS1L69B002	RIS	1L	69B	3	1	002	F	80	0	Non-Vented		Hard Shell
RIS1L69B003	RIS	1L	69B	3	1	003	F	58	0	Non-Vented		New Shell
RIS1L69B004	RIS	1L	69B	3	1	004	M	72	0	Non-Vented		Old Shell
RIS1L69B005	RIS	1L	69B	3	1	005	M	70	0	Non-Vented		
RIS1L69B006	RIS	1L	69B	3	1	006	F	77	0	Non-Vented		New Shell
RIS1L69B007	RIS	1L	69B	3	1	007	F	79	0	Non-Vented		New Shell
RIS1L69B008	RIS	1L	69B	3	1	008	F	77	~15% /2	Non-Vented		Hard Shell
RIS1L69B009	RIS	1L	69B	3	1	009	F	80	0	Non-Vented		New Shell
RIS1L69B010	RIS	1L	69B	3	1	010	F	57	0	Non-Vented		Hard Shell
RIS1L69B011	RIS	1L	69B	3	1	011	M	76	0	Non-Vented		New Shell
RIS1L69B012	RIS	1L	69B	3	1	012	F	80	0	Non-Vented		New Shell
RIS1L69B013	RIS	1L	69B	3	1	013	F	60	0	Non-Vented		Hard Shell
RIS1L69B014	RIS	1L	69B	3	1	014	F	61	0	Non-Vented		Hard Shell
RIS1L69B015	RIS	1L	69B	3	1	015	M	67	0	Non-Vented		New Shell
RIS1L69B016	RIS	1L	69B	3	2	016	F	82.6	<5% /1	Vented	YES	Hard Shell
RIS1L69B017	RIS	1L	69B	3	2	017	F	80	15-20% / 2	Vented		Hard Shell
RIS1L69B018	RIS	1L	69B	3	2	018	F	79	5-10% /1	Vented		
RIS1L69B019	RIS	1L	69B	3	3	019	F	71	0	Non-Vented		New Shell
RIS1L69B020	RIS	1L	69B	3	3	020	M	70	<5% /OLD	Non-Vented		New Shell
RIS1L69B021	RIS	1L	69B	3	3	021	F	82	~5% /1	Non-Vented		Hard Shell
RIS1L69B022	RIS	1L	69B	3	3	022	M	63	0	Non-Vented		New Shell
RIS1L69B023	RIS	1L	69B	3	3	023	M	74	0	Non-Vented		New Shell
RIS1L69B024	RIS	1L	69B	3	3	024	F	75	0	Non-Vented		Hard Shell
RIS1L69B025	RIS	1L	69B	3	3	025	M	74	0	Non-Vented		New Shell
RIS1L69B026	RIS	1L	69B	3	3	026	M	66	0	Non-Vented		Hard Shell
RIS1L69B027	RIS	1L	69B	3	3	027	M	68	0	Non-Vented		New Shell
RIS1L69B028	RIS	1L	69B	3	3	028	F	77	<5% /OLD	Non-Vented		New Shell
RIS1L69B029	RIS	1L	69B	3	4	029	F	87	5-10% /1	Vented		Hard Shell, V-notched
RIS1L69B030	RIS	1L	69B	3	4	030	F	80	35-40% /2	Vented		Hard Shell
RIS1L69B031	RIS	1L	69B	3	4	031	F	66	<5% /OLD	Vented		Hard Shell
RIS1L69B032	RIS	1L	69B	3	5	032	F	87	0	Non-Vented	YES	New Shell
RIS1L69B033	RIS	1L	69B	3	5	033	F	77	5% /1	Non-Vented		Hard Shell
RIS1L69B034	RIS	1L	69B	3	5	034	F	68	0	Non-Vented		Hard Shell
RIS1L69B035	RIS	1L	69B	3	5	035	F	81	5-10% /1	Non-Vented		Hard Shell
RIS1L69B036	RIS	1L	69B	3	5	036	F	70	0	Non-Vented		
RIS1L69B037	RIS	1L	69B	3	5	037	M	73	5-10% /OLD	Non-Vented		
RIS1L69B038	RIS	1L	69B	3	5	038	M	65	0	Non-Vented		New Shell
RIS1L69B039	RIS	1L	69B	3	5	039	F	67	0	Non-Vented		Hard Shell
RIS1L69B040	RIS	1L	69B	3	5	040	M	71	0	Non-Vented		Hard Shell

Sample ID	Study	Survey	Site	Trawl No.	Trap No.	Sample No.	Sex	Carapace length (mm)	External Disease % /Category	Pot Type	Tissue Chemistry	Comments
RIS1L69B041	RIS	1L	69B	3	5	041	M	79	0	Non-Vented		New Shell
RIS1L69B042	RIS	1L	69B	3	5	042	F	66	0	Non-Vented		New Shell
RIS1L69B043	RIS	1L	69B	3	5	043	M	66	<1% /1	Non-Vented		Hard Shell
RIS1L69B044	RIS	1L	69B	3	5	044	M	74	0	Non-Vented		New Shell
RIS1L69B045	RIS	1L	69B	3	5	045	F	74	0	Non-Vented		Hard Shell
RIS1L69B046	RIS	1L	69B	3	5	046	M	74	0	Non-Vented		New Shell
RIS1L69B047	RIS	1L	69B	3	5	047	M	70	0	Non-Vented		Hard Shell
RIS1L69B048	RIS	1L	69B	3	5	048	F	78	~30% /2	Non-Vented		New Shell
RIS1L69B049	RIS	1L	69B	3	6	049	F	81	0	Vented		New Shell
RIS1L69B050	RIS	1L	69B	4	1	050	F	82.6	<5% /1	Vented		Hard Shell, V-notched
RIS1L69B051	RIS	1L	69B	4	1	051	F	64	0	Vented		Hard Shell
RIS1L69B052	RIS	1L	69B	4	2	052	F	77	0	Non-Vented		Hard Shell
RIS1L69B053	RIS	1L	69B	4	2	053	F	78	<1% /1	Non-Vented		Hard Shell
RIS1L69B054	RIS	1L	69B	4	2	054	F	81	0	Non-Vented		New Shell
RIS1L69B055	RIS	1L	69B	4	2	055	M	75	0	Non-Vented		New Shell
RIS1L69B056	RIS	1L	69B	4	2	056	F	84	<5% /OLD	Non-Vented	YES	New Shell
RIS1L69B057	RIS	1L	69B	4	2	057	F	66	0	Non-Vented		New Shell
RIS1L69B058	RIS	1L	69B	4	3	058	M	81	0	Vented		New Shell
RIS1L69B059	RIS	1L	69B	4	3	059	F	78	<50%/2	Vented		Hard Shell
RIS1L69B060	RIS	1L	69B	4	4	060	F	72	0	Non-Vented		Hard Shell
RIS1L69B061	RIS	1L	69B	4	5	061	F	88	<1% /1	Vented		Hard Shell w/new eggs (made a V-notch)
RIS1L69B062	RIS	1L	69B	4	6	062	M	78	0	Non-Vented		New Shell
RIS1L69B063	RIS	1L	69B	4	6	063	F	79	<5% /1	Non-Vented		Hard Shell
RIS1L69B064	RIS	1L	69B	4	6	064	F	79	~5% /1	Non-Vented		Hard Shell
RIS1L69B065	RIS	1L	69B	4	6	065	M	74	0	Non-Vented		Hard Shell
RIS1L69B066	RIS	1L	69B	4	6	066	F	77	~10% /OLD	Non-Vented		Hard Shell
RIS1L69B067	RIS	1L	69B	4	6	067	M	69	0	Non-Vented		New Shell
RIS1L69B068	RIS	1L	69B	4	6	068	F	82	0	Non-Vented	YES	Hard Shell
RIS1L69B069	RIS	1L	69B	4	6	069	F	77	0	Non-Vented		Hard Shell
RIS1L69B070	RIS	1L	69B	4	6	070	F	72	1	Non-Vented		Hard Shell
RIS1L69B071	RIS	1L	69B	4	6	071	F	75	<1% /OLD	Non-Vented		Hard Shell
RIS1L69B072	RIS	1L	69B	4	6	072	M	68	0	Non-Vented		Hard Shell
RIS1L69B073	RIS	1L	69B	4	6	073	M	79	0	Non-Vented		Hard Shell
RIS1L69B074	RIS	1L	69B	5	1	074	F	87	0	Vented		V-notched
RIS1L69B075	RIS	1L	69B	5	1	075	F	82	0	Vented		
RIS1L69B076	RIS	1L	69B	5	2	076	F	87	0	Non-Vented		New Shell V-notched
RIS1L69B077	RIS	1L	69B	5	2	077	F	81	3	Non-Vented		
RIS1L69B078	RIS	1L	69B	5	2	078	F	55	0	Non-Vented		Hard Shell
RIS1L69B079	RIS	1L	69B	5	2	079	M	59	0	Non-Vented		New Shell
RIS1L69B080	RIS	1L	69B	5	2	080	M	72	0	Non-Vented		

Sample ID	Study	Survey	Site	Trawl No.	Trap No.	Sample No.	Sex	Carapace length (mm)	External Disease % /Category	Pot Type	Tissue Chemistry	Comments
RIS1L69B081	RIS	1L	69B	5	2	081	M	72	OLD	Non-Vented		
RIS1L69B082	RIS	1L	69B	5	2	082	M	73		Non-Vented		New Shell
RIS1L69B083	RIS	1L	69B	5	3	083	F	87	2	Vented		New Shell
RIS1L69B084	RIS	1L	69B	5	3	084	F	81	1	Vented		Hard Shell
RIS1L69B085	RIS	1L	69B	5	4	085	M	70	0	Non-Vented		Hard Shell
RIS1L69B086	RIS	1L	69B	5	4	086	M	70	0	Non-Vented		New Shell
RIS1L69B087	RIS	1L	69B	5	4	087	F	81	0	Non-Vented		New Shell
RIS1L69B088	RIS	1L	69B	5	4	088	M	73	0	Non-Vented		New Shell
RIS1L69B089	RIS	1L	69B	5	4	089	F	77	0	Non-Vented		New Shell
RIS1L69B090	RIS	1L	69B	5	4	090	M	77	0	Non-Vented		New Shell
RIS1L69B091	RIS	1L	69B	5	4	091	F	54	0	Non-Vented		Hard Shell
RIS1L69B092	RIS	1L	69B	5	4	092	M	63	0	Non-Vented		New Shell
RIS1L69B093	RIS	1L	69B	5	4	093	M	74	0	Non-Vented		New Shell
RIS1L69B094	RIS	1L	69B	5	4	094	F	72	0	Non-Vented		New Shell
RIS1L69B095	RIS	1L	69B	5	4	095	M	73	0	Non-Vented		New Shell
RIS1L69B096	RIS	1L	69B	5	5	096	F	75	0	Vented		
RIS1L69B097	RIS	1L	69B	5	5	097	F	85	0	Vented		
RIS1L69B098	RIS	1L	69B	5	5	098	F	82	0	Vented	YES	Hard Shell
RIS1L69B099	RIS	1L	69B	5	6	099	F	84	1	Non-Vented	YES	Hard Shell
RIS1L69B100	RIS	1L	69B	5	6	100	M	63	0	Non-Vented		New Shell
RIS1L69B101	RIS	1L	69B	5	6	101	F	69	~20% /OLD	Non-Vented		Hard Shell
RIS1L69B102	RIS	1L	69B	5	6	102	F	85	0	Non-Vented	YES	
RIS1L69B103	RIS	1L	69B	5	6	103	F	75	0	Non-Vented		New Shell
RIS1L69B104	RIS	1L	69B	5	6	104	M	71	0	Non-Vented		New Shell
RIS1L69B105	RIS	1L	69B	5	6	105	F	77	5-10% /1	Non-Vented		Hard Shell
RIS1L69B106	RIS	1L	69B	5	6	106	F	67	0	Non-Vented		Hard Shell
RIS1L69B107	RIS	1L	69B	5	6	107	M	77	5% /OLD	Non-Vented		Hard Shell
RIS1L69B108	RIS	1L	69B	5	6	108	F	78	0	Non-Vented		Hard Shell
RIS1L69B109	RIS	1L	69B	5	6	109	F	67	0	Non-Vented		Hard Shell
RIS1L69B110	RIS	1L	69B	5	6	110	M	74	5% /OLD	Non-Vented		New Shell
RIS1L69B111	RIS	1L	69B	5	6	111	F	79	10% /1	Non-Vented		Hard Shell
RIS1L69B112	RIS	1L	69B	5	6	112	M	73	0	Non-Vented		New Shell
RIS1L69B113	RIS	1L	69B	5	6	113	F	67	0	Non-Vented		New Shell
RIS1L69B114	RIS	1L	69B	5	6	114	M	73	0	Non-Vented		New Shell
RIS1L69B115	RIS	1L	69B	5	6	115	M	63	0	Non-Vented		Hard Shell
RIS1L69B116	RIS	1L	69B	5	6	116	F	78	0	Non-Vented		New Shell V-notched
RIS1L69B117	RIS	1L	69B	2	1	117	F	66	0	Non-Vented		Hard Shell
RIS1L69B118	RIS	1L	69B	2	1	118	M	70	0	Non-Vented		New Shell
RIS1L69B119	RIS	1L	69B	2	1	119	F	72	0	Non-Vented		Hard Shell
RIS1L69B120	RIS	1L	69B	2	1	120	F	68	0	Non-Vented		Hard Shell
RIS1L69B121	RIS	1L	69B	2	1	121	M	71	OLD (minor)	Non-Vented		New Shell
RIS1L69B122	RIS	1L	69B	2	1	122	F	75	0	Non-Vented		New Shell

Sample ID	Study	Survey	Site	Trawl No.	Trap No.	Sample No.	Sex	Carapace length (mm)	External Disease % /Category	Pot Type	Tissue Chemistry	Comments
RIS1L69B123	RIS	1L	69B	2	1	123	F	55	0	Non-Vented		Hard Shell
RIS1L69B124	RIS	1L	69B	2	1	124	F	83.8	0	Non-Vented		Newly Molted (soft)
RIS1L69B125	RIS	1L	69B	2	2	125	M	75	0	Vented		New Shell
RIS1L69B126	RIS	1L	69B	2	3	126	M	81	0	Non-Vented		Hard Shell
RIS1L69B127	RIS	1L	69B	2	3	127	F	83	<5% /OLD	Non-Vented	YES	New Shell
RIS1L69B128	RIS	1L	69B	2	3	128	M	79	0	Non-Vented		New Shell
RIS1L69B129	RIS	1L	69B	2	3	129	M	78	0	Non-Vented		New Shell
RIS1L69B130	RIS	1L	69B	2	3	130	M	75	0	Non-Vented		Hard Shell
RIS1L69B131	RIS	1L	69B	2	3	131	M	70	<5% /OLD	Non-Vented		Hard Shell
RIS1L69B132	RIS	1L	69B	2	3	132	M	77	0	Non-Vented		Hard Shell
RIS1L69B133	RIS	1L	69B	2	3	133	M	67	0	Non-Vented		Hard Shell
RIS1L69B134	RIS	1L	69B	2	3	134	M	73	0	Non-Vented		New Shell
RIS1L69B135	RIS	1L	69B	2	3	135	F	80	0	Non-Vented		Hard Shell
RIS1L69B136	RIS	1L	69B	2	4	136	F	81	0	Vented		Hard Shell
RIS1L69B137	RIS	1L	69B	2	4	137	M	74	0	Vented		Hard Shell
RIS1L69B138	RIS	1L	69B	2	4	138	F	75	40-45% /2	Vented		Hard Shell
RIS1L69B139	RIS	1L	69B	2	5	139	F	76	<5% /1	Non-Vented		Hard Shell
RIS1L69B140	RIS	1L	69B	2	5	140	F	73	0	Non-Vented		New Shell
RIS1L69B141	RIS	1L	69B	2	5	141	M	75	0	Non-Vented		New Shell
RIS1L69B142	RIS	1L	69B	2	5	142	M	77	0	Non-Vented		New Shell
RIS1L69B143	RIS	1L	69B	2	5	143	F	73	0	Non-Vented		Hard Shell
RIS1L69B144	RIS	1L	69B	2	5	144	M	79	<5% /OLD	Non-Vented		
RIS1L69B145	RIS	1L	69B	2	5	145	M	74	<5% minor /OLD	Non-Vented		Hard Shell
RIS1L69B146	RIS	1L	69B	2	5	146	M	70	0	Non-Vented		New Shell
RIS1L69B147	RIS	1L	69B	2	5	147	M	76	0	Non-Vented		New Shell
RIS1L69B148	RIS	1L	69B	2	5	148	M	63	0	Non-Vented		New Shell
RIS1L69B149	RIS	1L	69B	2	5	149	M	75	0	Non-Vented		New Shell
RIS1L69B150	RIS	1L	69B	2	5	150	M	70	<1% /OLD	Non-Vented		New Shell
RIS1L69B151	RIS	1L	69B	2	6	151	M	89	<1% /OLD	Vented	YES	New Shell
RIS1L69B152	RIS	1L	69B	2	6	152	F	87	0	Vented		Newly Molted (soft)
RIS1L69B153	RIS	1L	69B	1	1	153	F	81	~40% /2	Non-Vented		
RIS1L69B154	RIS	1L	69B	1	1	154	M	66	0	Non-Vented		Hard Shell
RIS1L69B155	RIS	1L	69B	1	1	155	M	63	0	Non-Vented		New Shell
RIS1L69B156	RIS	1L	69B	1	1	156	F	59	0	Non-Vented		Hard Shell
RIS1L69B157	RIS	1L	69B	1	1	157	F	77	0	Non-Vented		Hard Shell
RIS1L69B158	RIS	1L	69B	1	1	158	M	81	~30% /2	Non-Vented		Hard Shell
RIS1L69B159	RIS	1L	69B	1	1	159	M	82.8	0	Non-Vented	YES	Hard Shell
RIS1L69B160	RIS	1L	69B	1	1	160	F	65	0	Non-Vented		Hard Shell
RIS1L69B161	RIS	1L	69B	1	1	161	F	58	0	Non-Vented		Hard Shell
RIS1L69B162	RIS	1L	69B	1	1	162	M	81	~30% /OLD	Non-Vented		Hard Shell
RIS1L69B163	RIS	1L	69B	1	1	163	F	78	OLD (minor)	Non-Vented		New Shell

Sample ID	Study	Survey	Site	Trawl No.	Trap No.	Sample No.	Sex	Carapace length (mm)	External Disease % /Category	Pot Type	Tissue Chemistry	Comments
RIS1L69B164	RIS	1L	69B	1	1	164	M	63	OLD 10%	Non-Vented		New Shell
RIS1L69B165	RIS	1L	69B	1	1	165	F	76	0	Non-Vented		Hard Shell
RIS1L69B166	RIS	1L	69B	1	1	166	M	69	0	Non-Vented		Hard Shell
RIS1L69B167	RIS	1L	69B	1	1	167	M	69	0	Non-Vented		New Shell
RIS1L69B168	RIS	1L	69B	1	1	168	F	81	0	Non-Vented		New Shell
RIS1L69B	RIS	1L	69B	1	2					Vented		No Lobsters
RIS1L69B169	RIS	1L	69B	1	3	169	F	65	0	Non-Vented		New Shell
RIS1L69B170	RIS	1L	69B	1	3	170	M	71	0	Non-Vented		New Shell
RIS1L69B171	RIS	1L	69B	1	3	171	M	72	0	Non-Vented		New Shell
RIS1L69B172	RIS	1L	69B	1	3	172	F	80	OLD (minor)	Non-Vented		Hard Shell
RIS1L69B173	RIS	1L	69B	1	3	173	F	81	0	Non-Vented		New Shell
RIS1L69B174	RIS	1L	69B	1	3	174	F	77	~5% /1	Non-Vented		Split-back (ready to molt)
RIS1L69B175	RIS	1L	69B	1	3	175	M	75	0	Non-Vented		Hard Shell
RIS1L69B176	RIS	1L	69B	1	3	176	F	61	0	Non-Vented		Hard Shell
RIS1L69B177	RIS	1L	69B	1	3	177	F	58	0	Non-Vented		Hard Shell
RIS1L69B178	RIS	1L	69B	1	3	178	M	64	0	Non-Vented		Hard Shell
RIS1L69B179	RIS	1L	69B	1	3	179	M	66	0	Non-Vented		New Shell
RIS1L69B180	RIS	1L	69B	1	3	180	M	71	0	Non-Vented		Hard Shell
RIS1L69B181	RIS	1L	69B	1	3	181	M	73	0	Non-Vented		New Shell
RIS1L69B182	RIS	1L	69B	1	3	182	M	69	0	Non-Vented		Hard Shell
RIS1L69B183	RIS	1L	69B	1	3	183	F	70	0	Non-Vented		Hard Shell
RIS1L69B184	RIS	1L	69B	1	3	184	M	76	0	Non-Vented		Hard Shell
RIS1L69B185	RIS	1L	69B	1	3	185	F	66	0	Non-Vented		Hard Shell
RIS1L69B186	RIS	1L	69B	1	4	186	M	56	0	Vented		New Shell
RIS1L69B187	RIS	1L	69B	1	4	187	F	89	0	Vented		Hard Shell w/new eggs (made a V-notch)
RIS1L69B188	RIS	1L	69B	1	4	188	F	82	~20-25% /2	Vented		Hard Shell
RIS1L69B189	RIS	1L	69B	1	5	189	F	76	OLD (minor)	Non-Vented		New Shell
RIS1L69B190	RIS	1L	69B	1	5	190	F	82	0	Non-Vented		New Shell V-notched
RIS1L69B191	RIS	1L	69B	1	5	191	F	74	0	Non-Vented		Hard Shell
RIS1L69B192	RIS	1L	69B	1	5	192	M	74	OLD 0	Non-Vented		New Shell
RIS1L69B193	RIS	1L	69B	1	5	193	M	70	0	Non-Vented		Hard Shell
RIS1L69B194	RIS	1L	69B	1	5	194	F	65	0	Non-Vented		Hard Shell
RIS1L69B195	RIS	1L	69B	1	5	195	F	76	0	Non-Vented		Hard Shell
RIS1L69B196	RIS	1L	69B	1	5	196	F	71	<10% /1	Non-Vented		Hard Shell
RIS1L69B197	RIS	1L	69B	1	5	197	M	82	0	Non-Vented		Hard Shell
RIS1L69B198	RIS	1L	69B	1	5	198	M	73	0	Non-Vented		Hard Shell
RIS1L69B199	RIS	1L	69B	1	5	199	M	67	0	Non-Vented		New Shell
RIS1L69B200	RIS	1L	69B	1	5	200	M	61	0	Non-Vented		Hard Shell
RIS1L69B201	RIS	1L	69B	1	5	201	F	76	0	Non-Vented		Hard Shell
RIS1L69B202	RIS	1L	69B	1	5	202	F	64	<5% /1	Non-Vented		New Shell

Sample ID	Study	Survey	Site	Trawl No.	Trap No.	Sample No.	Sex	Carapace length (mm)	External Disease % /Category	Pot Type	Tissue Chemistry	Comments
RIS1L69B203	RIS	1L	69B	1	5	203	F	78	0	Non-Vented		New Shell
RIS1L69B204	RIS	1L	69B	1	5	204	F	81	0	Non-Vented		Hard Shell
RIS1L69B205	RIS	1L	69B	1	5	205	F	70	0	Non-Vented		New Shell
RIS1L69B206	RIS	1L	69B	1	5	206	M	69	0	Non-Vented		New Shell
RIS1L69B207	RIS	1L	69B	1	5	207	F	79	0	Non-Vented		Hard Shell
RIS1L69B208	RIS	1L	69B	1	5	208	F	58	0	Non-Vented		Hard Shell
RIS1L69B209	RIS	1L	69B	1	6	209	M	72	0	Vented		Hard Shell
RIS1L69B210	RIS	1L	69B	1	6	210	F	81	~40% /2	Vented		Split-back (ready to molt)
RIS1L69B211	RIS	1L	69B	1	6	211	F	81	0	Vented		New Shell
RIS1L69A212	RIS	1L	69A	4	1	212	M	69	0	Non-Vented		Hard Shell
RIS1L69A213	RIS	1L	69A	4	1	213	F	71	0	Non-Vented		New Shell
RIS1L69A214	RIS	1L	69A	4	1	214	M	73	0	Non-Vented		New Shell
RIS1L69A215	RIS	1L	69A	4	1	215	F	88	0	Non-Vented		Hard Shell
RIS1L69A216	RIS	1L	69A	4	1	216	F	79	0	Non-Vented		New Shell
RIS1L69A217	RIS	1L	69A	4	1	217	M	69	0	Non-Vented		Hard Shell
RIS1L69A218	RIS	1L	69A	4	1	218	F	72	0	Non-Vented		Hard Shell
RIS1L69A219	RIS	1L	69A	4	1	219	F	75	0	Non-Vented		Hard Shell
RIS1L69A220	RIS	1L	69A	4	1	220	M	68	0	Non-Vented		New Shell
RIS1L69A221	RIS	1L	69A	4	1	221	F	65	0	Non-Vented		Hard Shell
RIS1L69A222	RIS	1L	69A	4	1	222	F	71	0	Non-Vented		Hard Shell
RIS1L69A223	RIS	1L	69A	4	1	223	F	79	<5% /1	Non-Vented		Hard Shell
RIS1L69A224	RIS	1L	69A	4	1	224	F	76	0	Non-Vented		New Shell
RIS1L69A225	RIS	1L	69A	4	1	225	F	76	<1% /1	Non-Vented		Hard Shell
RIS1L69A226	RIS	1L	69A	4	1	226	F	55	0	Non-Vented		New Shell
RIS1L69A227	RIS	1L	69A	4	1	227	F	77	0	Non-Vented		Hard Shell
RIS1L69A228	RIS	1L	69A	4	1	228	F	75	<5% /1	Non-Vented		Hard Shell w/new eggs
RIS1L69A229	RIS	1L	69A	4	1	229	M	74	0	Non-Vented		New Shell
RIS1L69A230	RIS	1L	69A	4	1	230	M	85	0	Non-Vented	YES	New Shell
RIS1L69A231	RIS	1L	69A	4	1	231	M	76	0	Non-Vented		New Shell
RIS1L69A232	RIS	1L	69A	4	1	232	F	76	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A233	RIS	1L	69A	4	1	233	M	72	0	Non-Vented		New Shell
RIS1L69A234	RIS	1L	69A	4	1	234	F	64	0	Non-Vented		New Shell
RIS1L69A235	RIS	1L	69A	4	1	235	M	80	0	Non-Vented		Hard Shell
RIS1L69A236	RIS	1L	69A	4	1	236	F	77	0	Non-Vented		Hard Shell
RIS1L69A237	RIS	1L	69A	4	1	237	M	75	0	Non-Vented		New Shell
RIS1L69A238	RIS	1L	69A	4	1	238	F	78	<5% /1	Non-Vented		Hard Shell
RIS1L69A239	RIS	1L	69A	4	2	239	F	78	0	Vented		New Shell
RIS1L69A240	RIS	1L	69A	4	2	240	F	78	~40% /2	Vented		Hard shell w/ cracked back- ready to molt
RIS1L69A241	RIS	1L	69A	4	2	241	F	88	0	Vented		New Shell V-notched

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RIS1L69A242	RIS	1L	69A	4	2	242	F	67	0	Vented		Hard Shell
RIS1L69A243	RIS	1L	69A	4	2	243	M	73	0	Non-Vented		Hard Shell
RIS1L69A244	RIS	1L	69A	4	3	244	F	76	0	Non-Vented		New Shell
RIS1L69A245	RIS	1L	69A	4	3	245	F	78	0	Non-Vented		Hard Shell
RIS1L69A246	RIS	1L	69A	4	3	246	M	85	0	Non-Vented	YES	New Shell
RIS1L69A247	RIS	1L	69A	4	3	247	M	81	0	Non-Vented		Hard Shell
RIS1L69A248	RIS	1L	69A	4	3	248	F	80	0	Non-Vented		New Shell
RIS1L69A249	RIS	1L	69A	4	3	249	F	73	0	Non-Vented		Hard Shell
RIS1L69A250	RIS	1L	69A	4	3	250	M	64	0	Non-Vented		Hard Shell
RIS1L69A251	RIS	1L	69A	4	3	251	F	61	0	Non-Vented		Hard Shell
RIS1L69A252	RIS	1L	69A	4	3	252	M	64	0	Non-Vented		New Shell
RIS1L69A253	RIS	1L	69A	4	3	253	M	72	~5% /OLD	Non-Vented		Hard Shell
RIS1L69A254	RIS	1L	69A	4	3	254	F	74	0	Non-Vented		Hard Shell
RIS1L69A255	RIS	1L	69A	4	3	255	F	69	0	Non-Vented		New Shell
RIS1L69A256	RIS	1L	69A	4	3	256	F	79	0	Non-Vented		New Shell
RIS1L69A257	RIS	1L	69A	4	3	257	F	74	5-10% /1	Non-Vented		Hard Shell
RIS1L69A258	RIS	1L	69A	4	3	258	M	72	0	Non-Vented		New Shell
RIS1L69A259	RIS	1L	69A	4	3	259	M	65	0	Non-Vented		Hard Shell
RIS1L69A260	RIS	1L	69A	4	3	260	M	80	0	Vented		Hard Shell
RIS1L69A261	RIS	1L	69A	4	4	261	F	82	0	Non-Vented	YES	New Shell
RIS1L69A262	RIS	1L	69A	4	5	262	M	78	0	Non-Vented		Hard Shell
RIS1L69A263	RIS	1L	69A	4	5	263	M	78	0	Non-Vented		New Shell
RIS1L69A264	RIS	1L	69A	4	5	264	M	74	0	Non-Vented		New Shell
RIS1L69A265	RIS	1L	69A	4	5	265	F	77	0	Non-Vented		Hard Shell
RIS1L69A266	RIS	1L	69A	4	5	266	M	78	0	Non-Vented		Hard Shell
RIS1L69A267	RIS	1L	69A	4	5	267	F	77	0	Non-Vented		Hard Shell
RIS1L69A268	RIS	1L	69A	4	5	268	F	77	0	Non-Vented		Hard Shell
RIS1L69A269	RIS	1L	69A	4	5	269	F	80	<5% /OLD	Non-Vented		New Shell
RIS1L69A270	RIS	1L	69A	4	5	270	F	64	0	Non-Vented		New Shell
RIS1L69A271	RIS	1L	69A	4	5	271	M	59	0	Non-Vented		Hard Shell
RIS1L69A272	RIS	1L	69A	4	5	272	M	76	OLD	Non-Vented		New Shell
RIS1L69A273	RIS	1L	69A	4	5	273	F	78	0	Non-Vented		New Shell
RIS1L69A274	RIS	1L	69A	4	5	274	F	78	OLD (minor scarring)	Non-Vented		Hard Shell
RIS1L69A275	RIS	1L	69A	4	5	275	F	80	0	Non-Vented		New Shell
RIS1L69A276	RIS	1L	69A	4	5	276	M	82	0	Non-Vented		Hard Shell
RIS1L69A277	RIS	1L	69A	4	5	277	F	80	0	Non-Vented		Hard Shell
RIS1L69A278	RIS	1L	69A	4	5	278	M	72	0	Non-Vented		Hard Shell
RIS1L69A279	RIS	1L	69A	4	5	279	F	73	0	Non-Vented		Hard Shell
RIS1L69A280	RIS	1L	69A	4	6	280	F	62	0	Vented		Hard Shell
RIS1L69A281	RIS	1L	69A	4	6	281	M	70	0	Vented		Hard Shell
RIS1L69A282	RIS	1L	69A	3	1	282	F	75	0	Non-Vented		New Shell
RIS1L69A283	RIS	1L	69A	3	1	283	M	77	0	Non-Vented		New Shell

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RIS1L69A284	RIS	1L	69A	3	1	284	F	76	OLD (minor)	Non-Vented		New Shell
RIS1L69A285	RIS	1L	69A	3	1	285	F	70	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A286	RIS	1L	69A	3	1	286	F	66	0	Non-Vented		Hard Shell
RIS1L69A287	RIS	1L	69A	3	1	287	F	81	~5% /OLD	Non-Vented		Hard Shell
RIS1L69A288	RIS	1L	69A	3	1	288	F	79	0	Non-Vented		Hard Shell
RIS1L69A289	RIS	1L	69A	3	1	289	F	71	0	Non-Vented		Hard Shell
RIS1L69A290	RIS	1L	69A	3	1	290	F	82	0	Non-Vented		Hard Shell
RIS1L69A291	RIS	1L	69A	3	1	291	F	61	0	Non-Vented		Hard Shell
RIS1L69A292	RIS	1L	69A	3	1	292	F	77	0	Non-Vented		Hard Shell
RIS1L69A293	RIS	1L	69A	3	1	293	M	76	0	Non-Vented		Hard Shell
RIS1L69A294	RIS	1L	69A	3	1	294	F	72	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A295	RIS	1L	69A	3	1	295	F	72	~5% /1	Non-Vented		Hard Shell
RIS1L69A296	RIS	1L	69A	3	1	296	F	60	0	Non-Vented		Hard Shell
RIS1L69A297	RIS	1L	69A	3	1	297	F	62	0	Non-Vented		Hard Shell
RIS1L69A298	RIS	1L	69A	3	1	298	M	66	0	Non-Vented		Hard Shell
RIS1L69A299	RIS	1L	69A	3	1	299	M	68	0	Non-Vented		Hard Shell
RIS1L69A300	RIS	1L	69A	3	1	300	F	78	~1% /OLD	Non-Vented		Hard Shell crackback
RIS1L69A301	RIS	1L	69A	3	1	301	F	72	0	Non-Vented		Hard Shell
RIS1L69A302	RIS	1L	69A	3	1	302	F	76	OLD (minor)	Non-Vented		New Shell
RIS1L69A303	RIS	1L	69A	3	1	303	M	65	OLD (minor)	Non-Vented		New Shell
RIS1L69A304	RIS	1L	69A	3	1	304	M	71	0	Non-Vented		New Shell
RIS1L69A305	RIS	1L	69A	3	1	305	F	67	0	Non-Vented		Hard Shell
RIS1L69A306	RIS	1L	69A	3	1	306	M	64	0	Non-Vented		New Shell
RIS1L69A307	RIS	1L	69A	3	1	307	F	80	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A308	RIS	1L	69A	3	1	308	F	75	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A309	RIS	1L	69A	3	1	309	M	73	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A310	RIS	1L	69A	3	1	310	M	65	~1% /1	Non-Vented		Hard Shell
RIS1L69A311	RIS	1L	69A	3	2	311	F	79	<5% /1	Non-Vented		Hard Shell
RIS1L69A312	RIS	1L	69A	3	3	312	F	81	~5% /1	Non-Vented		Hard Shell
RIS1L69A313	RIS	1L	69A	3	3	313	M	82	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A314	RIS	1L	69A	3	3	314	M	66	~30% /OLD	Non-Vented		New Shell
RIS1L69A315	RIS	1L	69A	3	3	315	M	76	0	Non-Vented		Hard Shell
RIS1L69A316	RIS	1L	69A	3	3	316	M	76	0	Non-Vented		Hard Shell
RIS1L69A317	RIS	1L	69A	3	3	317	M	79	0	Non-Vented		Hard Shell
RIS1L69A318	RIS	1L	69A	3	3	318	F	70	0	Non-Vented		Hard Shell
RIS1L69A319	RIS	1L	69A	3	3	319	F	71	OLD	Non-Vented		Hard Shell
RIS1L69A320	RIS	1L	69A	3	3	320	M	58	OLD (minor)	Vented		New Shell
RIS1L69A321	RIS	1L	69A	3	4	321	M	65	0	Non-Vented		Hard Shell
RIS1L69A322	RIS	1L	69A	3	5	322	F	73	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A323	RIS	1L	69A	3	5	323	F	73	OLD 0	Non-Vented		Hard Shell
RIS1L69A324	RIS	1L	69A	3	5	324	M	77	0	Non-Vented		New Shell
RIS1L69A325	RIS	1L	69A	3	5	325	F	77	0	Non-Vented		New Shell

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RIS1L69A326	RIS	1L	69A	3	5	326	M	65	0	Non-Vented		New Shell
RIS1L69A327	RIS	1L	69A	3	5	327	F	76	0	Non-Vented		Hard Shell
RIS1L69A328	RIS	1L	69A	3	5	328	M	77	0	Non-Vented		Hard Shell
RIS1L69A329	RIS	1L	69A	3	5	329	M	69	0	Non-Vented		Hard Shell
RIS1L69A330	RIS	1L	69A	3	5	330	M	64	0	Non-Vented		New Shell
RIS1L69A331	RIS	1L	69A	3	5	331	M	70	<5% /1	Non-Vented		Hard Shell
RIS1L69A332	RIS	1L	69A	3	5	332	F	69	0	Non-Vented		Hard Shell
RIS1L69A333	RIS	1L	69A	3	5	333	M	70	0	Non-Vented		Hard Shell
RIS1L69A334	RIS	1L	69A	3	5	334	M	75	0	Non-Vented		Hard Shell
RIS1L69A335	RIS	1L	69A	3	5	335	M	82	0	Non-Vented		New Shell
RIS1L69A336	RIS	1L	69A	3	5	336	F	78	0	Non-Vented		New Shell
RIS1L69A337	RIS	1L	69A	3	5	337	M	75	0	Non-Vented		Hard Shell
RIS1L69A338	RIS	1L	69A	3	5	338	F	80	0	Non-Vented		Hard Shell
RIS1L69A339	RIS	1L	69A	3	5	339	F	64	0	Non-Vented		New Shell
RIS1L69A340	RIS	1L	69A	3	5	340	M	63	0	Vented		New Shell
RIS1L69A341	RIS	1L	69A	3	6	341	M	82	0	Vented		
RIS1L69A342	RIS	1L	69A	3	6	342	F	72	0	Vented		Hard Shell
RIS1L69A343	RIS	1L	69A	3	6	343	F	79	5-10% /1	Vented		Hard Shell
RIS1L69A344	RIS	1L	69A	5	1	344	M	77	0	Non-Vented		Hard Shell
RIS1L69A345	RIS	1L	69A	5	1	345	M	61	0	Non-Vented		New Shell
RIS1L69A346	RIS	1L	69A	5	1	346	M	73	0	Non-Vented		New Shell
RIS1L69A347	RIS	1L	69A	5	1	347	M	76	0	Non-Vented		New Shell
RIS1L69A348	RIS	1L	69A	5	1	348	F	81	OLD (minor)	Non-Vented	YES	New Shell
RIS1L69A349	RIS	1L	69A	5	1	349	F	78	~25% /2	Non-Vented		Hard Shell crackback
RIS1L69A350	RIS	1L	69A	5	1	350	M	68	0	Non-Vented		New Shell
RIS1L69A351	RIS	1L	69A	5	1	351	M	63	0	Non-Vented		New Shell
RIS1L69A352	RIS	1L	69A	5	1	352	M	74	OLD (minor)	Non-Vented		New Shell
RIS1L69A353	RIS	1L	69A	5	1	353	M	74	0	Non-Vented		Hard Shell
RIS1L69A354	RIS	1L	69A	5	1	354	M	75	0	Non-Vented		New Shell
RIS1L69A355	RIS	1L	69A	5	1	355	F	76	0	Non-Vented		New Shell
RIS1L69A356	RIS	1L	69A	5	1	356	M	63	0	Non-Vented		New Shell
RIS1L69A357	RIS	1L	69A	5	2	357	M	75	0	Vented		Hard Shell
RIS1L69A358	RIS	1L	69A	5	2	358	M	77	0	Vented		New Shell
RIS1L69A359	RIS	1L	69A	5	3	359	F	80	<5% /1	Non-Vented		Hard Shell
RIS1L69A360	RIS	1L	69A	5	3	360	F	81	0	Non-Vented		New Shell
RIS1L69A361	RIS	1L	69A	5	3	361	M	75	0	Non-Vented		New Shell
RIS1L69A362	RIS	1L	69A	5	3	362	F	55	0	Non-Vented		Hard Shell
RIS1L69A363	RIS	1L	69A	5	3	363	F	67	0	Non-Vented		Hard Shell
RIS1L69A364	RIS	1L	69A	5	3	364	M	66	0	Non-Vented		New Shell
RIS1L69A365	RIS	1L	69A	5	3	365	M	64	0	Non-Vented		Hard Shell
RIS1L69A366	RIS	1L	69A	5	3	366	F	68	0	Non-Vented		New Shell
RIS1L69A367	RIS	1L	69A	5	3	367	M	72	0	Non-Vented		Hard Shell

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RIS1L69A368	RIS	1L	69A	5	3	368	F	66	0	Non-Vented		New Shell
RIS1L69A369	RIS	1L	69A	5	3	369	F	73	<1% /1	Non-Vented		Hard Shell Crackback
RIS1L69A370	RIS	1L	69A	5	3	370	M	68	<1% /1	Non-Vented		Hard Shell
RIS1L69A371	RIS	1L	69A	5	3	371	F	79	~15-20% /2	Non-Vented		Hard Shell crackback
RIS1L69A372	RIS	1L	69A	5	3	372	M	76	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A373	RIS	1L	69A	5	3	373	F	70	<1% /1	Non-Vented		Hard Shell
RIS1L69A374	RIS	1L	69A	5	3	374	M	75	0	Non-Vented		Hard Shell
RIS1L69A375	RIS	1L	69A	5	3	375	F	54	0	Non-Vented		Hard Shell
RIS1L69A376	RIS	1L	69A	5	3	376	M	58	0	Non-Vented		New Shell
RIS1L69A377	RIS	1L	69A	5	3	377	M	71	OLD (moderate)	Non-Vented		New Shell
RIS1L69A378	RIS	1L	69A	5	4	378	F	95	~5-10% /1	Vented		Hard Shell V-notched
RIS1L69A379	RIS	1L	69A	5	4	379	F	82	~5-10% /1	Vented		Hard Shell
RIS1L69A380	RIS	1L	69A	5	4	380	M	64	0	Vented		Hard Shell
RIS1L69A381	RIS	1L	69A	5	5	381	F	80	OLD (minor)	Non-Vented	YES	Hard Shell
RIS1L69A382	RIS	1L	69A	5	5	382	M	65	0	Non-Vented		Hard Shell
RIS1L69A383	RIS	1L	69A	5	5	383	M	67	0	Non-Vented		Hard Shell
RIS1L69A384	RIS	1L	69A	5	5	384	F	71	0	Non-Vented		Hard Shell
RIS1L69A385	RIS	1L	69A	5	5	385	F	83	~10% /1	Non-Vented	YES	Hard Shell
RIS1L69A386	RIS	1L	69A	5	5	386	F	77	<5% /1	Non-Vented		Hard Shell
RIS1L69A387	RIS	1L	69A	5	5	387	M	80	0	Non-Vented		Hard Shell
RIS1L69A388	RIS	1L	69A	5	5	388	F	79	0	Non-Vented		New Shell
RIS1L69A389	RIS	1L	69A	5	5	389	M	81	0	Non-Vented	YES	Hard Shell
RIS1L69A390	RIS	1L	69A	5	5	390	F	68	0	Non-Vented		Hard Shell
RIS1L69A391	RIS	1L	69A	5	5	391	F	70	0	Non-Vented		New Shell
RIS1L69A392	RIS	1L	69A	5	5	392	M	70	0	Non-Vented		Hard Shell
RIS1L69A393	RIS	1L	69A	5	6	393	M	79	OLD (minor)	Vented		Hard Shell
RIS1L69A394	RIS	1L	69A	5	6	394	F	69	0	Vented		New Shell
RIS1L69A395	RIS	1L	69A	5	6	395	F	82.7	0	Vented		Hard Shell V-notched
RIS1L69A396	RIS	1L	69A	5	6	396	F	92	<1% /1	Vented		Hard Shell V-notched
RIS1L69A397	RIS	1L	69A	2	1	397	M	80	0	Vented		New Shell
RIS1L69A398	RIS	1L	69A	2	1	398	F	86	OLD (minor)	Vented		New Shell V-notched
RIS1L69A399	RIS	1L	69A	2	1	399	F	83.3	OLD (minor)	Non-Vented	YES	New Shell
RIS1L69A400	RIS	1L	69A	2	2	400	M	73	0	Non-Vented		Hard Shell
RIS1L69A401	RIS	1L	69A	2	2	401	M	76	0	Non-Vented		New Shell
RIS1L69A402	RIS	1L	69A	2	2	402	F	69	0	Non-Vented		Hard Shell
RIS1L69A403	RIS	1L	69A	2	2	403	F	78	0	Non-Vented		Hard Shell
RIS1L69A404	RIS	1L	69A	2	2	404	M	82	0	Non-Vented		Hard Shell
RIS1L69A405	RIS	1L	69A	2	2	405	M	83	0	Non-Vented	YES	Hard Shell

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RIS1L69A406	RIS	1L	69A	2	2	406	F	81	0	Non-Vented		New Shell
RIS1L69A407	RIS	1L	69A	2	2	407	F	78	OLD (minor)	Non-Vented		New Shell
RIS1L69A408	RIS	1L	69A	2	2	408	F	70	0	Non-Vented		Hard Shell
RIS1L69A409	RIS	1L	69A	2	2	409	M	77	OLD (minor)	Non-Vented		New Shell
RIS1L69A410	RIS	1L	69A	2	2	410	M	77	0	Non-Vented		Hard Shell
RIS1L69A411	RIS	1L	69A	2	2	411	M	57	OLD (minor)	Non-Vented		New Shell
RIS1L69A412	RIS	1L	69A	2	2	412	M	72	OLD (minor)	Non-Vented		New Shell
RIS1L69A413	RIS	1L	69A	2	2	413	M	78	0	Non-Vented		New Shell
RIS1L69A414	RIS	1L	69A	2	3	414				Vented		No lobsters
RIS1L69A415	RIS	1L	69A	2	4	415	M	80	0	Non-Vented		New Shell
RIS1L69A416	RIS	1L	69A	2	4	416	M	78	0	Non-Vented		Hard Shell
RIS1L69A417	RIS	1L	69A	2	4	417	M	78	0	Non-Vented		New Shell
RIS1L69A418	RIS	1L	69A	2	4	418	M	78	0	Non-Vented		Hard Shell
RIS1L69A419	RIS	1L	69A	2	4	419	F	66	0	Non-Vented		Hard Shell
RIS1L69A420	RIS	1L	69A	2	4	420	M	70	0	Non-Vented		Hard Shell
RIS1L69A421	RIS	1L	69A	2	4	421	F	66	0	Non-Vented		New Shell
RIS1L69A422	RIS	1L	69A	2	4	422	F	79	0	Non-Vented		Hard Shell
RIS1L69A423	RIS	1L	69A	2	4	423	F	75	1% /1	Non-Vented		Hard Shell
RIS1L69A424	RIS	1L	69A	2	4	424	F	71	0	Non-Vented		Hard Shell
RIS1L69A425	RIS	1L	69A	2	4	425	F	79	0	Non-Vented		Hard Shell
RIS1L69A426	RIS	1L	69A	2	4	426	F	78	0	Non-Vented		Hard Shell
RIS1L69A427	RIS	1L	69A	2	4	427	M	83.1	0	Non-Vented		Hard Shell
RIS1L69A428	RIS	1L	69A	2	4	428	M	81	0	Non-Vented		New Shell
RIS1L69A429	RIS	1L	69A	2	5	429	F	87	5% /1	Vented		Hard Shell V-notched
RIS1L69A430	RIS	1L	69A	2	6	430	F	91	0	Non-Vented		Hard Shell V-notched
RIS1L69A431	RIS	1L	69A	2	6	431	F	78	0	Non-Vented		Hard Shell
RIS1L69A432	RIS	1L	69A	2	6	432	M	67	0	Non-Vented		New Shell
RIS1L69A433	RIS	1L	69A	2	6	433	F	79	45-50% /2	Non-Vented		Hard Shell
RIS1L69A434	RIS	1L	69A	2	6	434	M	82.7	0	Non-Vented	YES	New Shell
RIS1L69A435	RIS	1L	69A	2	6	435	F	79	0	Non-Vented		New Shell
RIS1L69A436	RIS	1L	69A	2	6	436	M	81	0	Non-Vented		Hard Shell
RIS1L69A437	RIS	1L	69A	2	6	437	F	84	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A438	RIS	1L	69A	2	6	438	F	70	0	Non-Vented		Hard Shell
RIS1L69A439	RIS	1L	69A	2	6	439	F	82	<5% /1	Non-Vented		Hard Shell
RIS1L69A440	RIS	1L	69A	2	6	440	F	78	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A441	RIS	1L	69A	2	6	441	F	79	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A442	RIS	1L	69A	1	1	442	F	81	35% /2	Vented		Hard Shell crackback
RIS1L69A443	RIS	1L	69A	1	1	443	F	79	0	Vented		Hard Shell
RIS1L69A444	RIS	1L	69A	1	1	444	F	89	OLD /1	Vented	YES	New Shell
RIS1L69A445	RIS	1L	69A	1	1	445	F	86	0	Vented	YES	New Shell
RIS1L69A446	RIS	1L	69A	1	1	446	M	80	0	Vented		New Shell

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RIS1L69A447	RIS	1L	69A	1	1	447	F	82	0	Vented		New Shell
RIS1L69A448	RIS	1L	69A	1	1	448	F	81	0	Vented		Hard Shell
RIS1L69A449	RIS	1L	69A	1	1	449	F	72	<5% /1	Vented		New Shell
RIS1L69A450	RIS	1L	69A	1	2	450	F	78	0	Non-Vented		New Shell
RIS1L69A451	RIS	1L	69A	1	2	451	F	81	<1% /1	Non-Vented		Hard Shell
RIS1L69A452	RIS	1L	69A	1	2	452	F	78	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A453	RIS	1L	69A	1	2	453	F	76	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A454	RIS	1L	69A	1	2	454	F	82	0	Non-Vented		Hard Shell
RIS1L69A455	RIS	1L	69A	1	2	455	F	85	<5% /1	Non-Vented		Hard Shell
RIS1L69A456	RIS	1L	69A	1	2	456	F	80	0	Non-Vented		New Shell
RIS1L69A457	RIS	1L	69A	1	2	457	F	77	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A458	RIS	1L	69A	1	2	458	F	78	0	Non-Vented		Hard Shell
RIS1L69A459	RIS	1L	69A	1	2	459	M	69	0	Non-Vented		New Shell
RIS1L69A460	RIS	1L	69A	1	2	460	F	82	1% /1	Non-Vented		Hard Shell
RIS1L69A461	RIS	1L	69A	1	2	461	F	79	0	Non-Vented		Hard Shell
RIS1L69A462	RIS	1L	69A	1	2	462	F	76	0	Non-Vented		New Shell
RIS1L69A463	RIS	1L	69A	1	2	463	M	83.9	OLD (moderate)	Non-Vented		Hard Shell
RIS1L69A464	RIS	1L	69A	1	2	464	F	82.7	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A465	RIS	1L	69A	1	2	465	F	76	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A466	RIS	1L	69A	1	2	466	M	83.5	0	Non-Vented		New Shell
RIS1L69A467	RIS	1L	69A	1	2	467	F	78	OLD (minor)	Non-Vented		New Shell
RIS1L69A468	RIS	1L	69A	1	2	468	F	62	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A469	RIS	1L	69A	1	3	469	F	82	0	Vented		Hard Shell
RIS1L69A470	RIS	1L	69A	1	3	470	F	81	OLD (minor)	Vented		New Shell
RIS1L69A471	RIS	1L	69A	1	3	471	F	73	~5% /1	Vented		Hard Shell
RIS1L69A472	RIS	1L	69A	1	4	472	F	80	0	Non-Vented		Hard Shell
RIS1L69A473	RIS	1L	69A	1	4	473	F	85	0	Non-Vented		New Shell
RIS1L69A474	RIS	1L	69A	1	4	474	F	79	0	Non-Vented		Hard Shell
RIS1L69A475	RIS	1L	69A	1	4	475	F	78	<1% /1	Non-Vented		Hard Shell
RIS1L69A476	RIS	1L	69A	1	4	476	F	74	<5% /1	Non-Vented		Hard Shell
RIS1L69A477	RIS	1L	69A	1	4	477	F	78	0	Non-Vented		Hard Shell
RIS1L69A478	RIS	1L	69A	1	4	478	M	75	0	Non-Vented		New Shell
RIS1L69A479	RIS	1L	69A	1	4	479	F	69	0	Non-Vented		Hard Shell
RIS1L69A480	RIS	1L	69A	1	4	480	F	79	0	Non-Vented		Hard Shell
RIS1L69A481	RIS	1L	69A	1	4	481	F	73	<5% /1	Non-Vented		Hard Shell
RIS1L69A482	RIS	1L	69A	1	4	482	F	68	<5% /1	Non-Vented		New Shell
RIS1L69A483	RIS	1L	69A	1	4	483	F	77	0	Non-Vented		Hard Shell
RIS1L69A484	RIS	1L	69A	1	4	484	M	68	0	Non-Vented		Hard Shell
RIS1L69A485	RIS	1L	69A	1	4	485	F	70	OLD (minor)	Non-Vented		New Shell
RIS1L69A486	RIS	1L	69A	1	4	486	F	59	0	Non-Vented		Hard Shell
RIS1L69A487	RIS	1L	69A	1	5	487	F	86	0	Vented		New Shell
RIS1L69A488	RIS	1L	69A	1	5	488	M	79	0	Vented		New Shell

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RIS1L69A489	RIS	1L	69A	1	5	489	M	75	0	Vented		Hard Shell
RIS1L69A490	RIS	1L	69A	1	6	490	M	77	0	Non-Vented		Hard Shell
RIS1L69A491	RIS	1L	69A	1	6	491	M	76	0	Non-Vented		New Shell
RIS1L69A492	RIS	1L	69A	1	6	492	F	75	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A493	RIS	1L	69A	1	6	493	F	80	0	Non-Vented		New Shell
RIS1L69A494	RIS	1L	69A	1	6	494	F	81	0	Non-Vented		Hard Shell
RIS1L69A495	RIS	1L	69A	1	6	495	F	78	<1% /1	Non-Vented		Hard Shell
RIS1L69A496	RIS	1L	69A	1	6	496	F	82	OLD (minor)	Non-Vented		Hard Shell
RIS1L69A497	RIS	1L	69A	1	6	497	M	86	0	Non-Vented		New Shell
RIS1L69A498	RIS	1L	69A	1	6	498	M	77	OLD (minor)	Non-Vented		New Shell
RIS1L69A499	RIS	1L	69A	1	6	499	F	62	0	Non-Vented		Hard Shell
RIS1L16500	RIS	1L	16	1	1	500	F	70	OLD (minor)	Non-Vented		Hard Shell
RIS1L16501	RIS	1L	16	1	1	501	M	82	0	Non-Vented	YES	New Shell
RIS1L16502	RIS	1L	16	1	1	502	F	79	OLD "ms"	Non-Vented		Hard Shell
RIS1L16503	RIS	1L	16	1	1	503	F	81	~5% /1	Non-Vented		Hard Shell
RIS1L16504	RIS	1L	16	1	1	504	F	76	OLD (minor)	Non-Vented		Hard Shell
RIS1L16505	RIS	1L	16	1	1	505	F	76	0	Non-Vented		Hard Shell
RIS1L16506	RIS	1L	16	1	1	506	F	79	~1% /1	Non-Vented	YES	Hard Shell
RIS1L16507	RIS	1L	16	1	1	507	M	84	0	Non-Vented	YES	New Shell
RIS1L16508	RIS	1L	16	1	1	508	M	64	0	Non-Vented		Hard Shell
RIS1L16509	RIS	1L	16	1	1	509	F	72	0	Non-Vented		New Shell
RIS1L16510	RIS	1L	16	1	1	510	F	84	0	Non-Vented	YES	Hard Shell
RIS1L16511	RIS	1L	16	1	1	511	F	85	0	Non-Vented	YES	New Shell
RIS1L16512	RIS	1L	16	1	1	512	F	62	0	Non-Vented		Hard Shell
RIS1L16513	RIS	1L	16	1	1	513	F	80	OLD (minor)	Non-Vented	YES	Hard Shell
RIS1L16514	RIS	1L	16	1	1	514	F	82.4	0	Non-Vented	YES	Hard Shell
RIS1L16515	RIS	1L	16	1	1	515	F	81	OLD (minor)	Non-Vented		New Shell
RIS1L16516	RIS	1L	16	1	1	516	F	82	OLD (minor)	Non-Vented		New Shell
RIS1L16517	RIS	1L	16	1	1	517	M	70	0	Non-Vented		Hard Shell
RIS1L16518	RIS	1L	16	1	1	518	M	66	0	Non-Vented		Hard Shell
RIS1L16519	RIS	1L	16	1	1	519	F	69	0	Non-Vented		Hard Shell
RIS1L16520	RIS	1L	16	1	1	520	F	59	0	Non-Vented		Hard Shell
RIS1L16521	RIS	1L	16	1	1	521	F	73	~1% /1	Non-Vented		Hard Shell
RIS1L16522	RIS	1L	16	1	1	522	M	74	0	Non-Vented		New Shell
RIS1L16523	RIS	1L	16	1	1	523	F	72	OLD (minor)	Non-Vented		Hard Shell
RIS1L16524	RIS	1L	16	1	1	524	F	70	OLD (minor)	Non-Vented		New Shell
	RIS	1L	16	1	2							No lobsters
RIS1L16525	RIS	1L	16	1	3	525	M	62	0	Non-Vented		New Shell
RIS1L16526	RIS	1L	16	1	3	526	F	70	0	Non-Vented		Hard Shell
RIS1L16527	RIS	1L	16	1	3	527	F	67	0	Non-Vented		Hard Shell
RIS1L16528	RIS	1L	16	1	3	528	F	72	0	Non-Vented		Hard Shell
RIS1L16529	RIS	1L	16	1	3	529	F	78	0	Non-Vented		Hard Shell

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RIS1L16530	RIS	1L	16	1	3	530	F	85	OLD (minor)	Non-Vented	YES	Hard Shell
RIS1L16531	RIS	1L	16	1	3	531	F	67	OLD (minor)	Non-Vented		Hard Shell
RIS1L16532	RIS	1L	16	1	3	532	F	69	0	Non-Vented		New Shell
RIS1L16533	RIS	1L	16	1	3	533	F	86	0	Non-Vented	YES	New Shell
RIS1L16534	RIS	1L	16	1	4	534	F	81	0	Vented		Hard Shell
RIS1L16535	RIS	1L	16	1	5	535	M	77	OLD (minor)	Non-Vented		New Shell
RIS1L16536	RIS	1L	16	1	5	536	F	82.9	~1% /1	Non-Vented	YES	Hard Shell
RIS1L16537	RIS	1L	16	1	5	537	F	76	0	Non-Vented		Hard Shell
RIS1L16538	RIS	1L	16	1	5	538	F	81	0	Non-Vented		New Shell
RIS1L16539	RIS	1L	16	1	5	539	M	75	OLD (minor)	Non-Vented		Hard Shell
RIS1L16540	RIS	1L	16	1	5	540	F	75	0	Non-Vented		Hard Shell
RIS1L16541	RIS	1L	16	1	5	541	M	64	0	Non-Vented		New Shell
RIS1L16542	RIS	1L	16	1	5	542	F	70	0	Non-Vented		Hard Shell
RIS1L16543	RIS	1L	16	1	5	543	F	74	~1% /OLD	Non-Vented		Hard Shell
RIS1L16544	RIS	1L	16	1	5	544	M	65	0	Non-Vented		Hard Shell
RIS1L16545	RIS	1L	16	1	5	545	F	79	~30% /2	Non-Vented		Hard Shell crackback
RIS1L16546	RIS	1L	16	1	5	546	M	69	0	Non-Vented		New Shell
RIS1L16547	RIS	1L	16	1	5	547	M	58	0	Non-Vented		New Shell
RIS1L16548	RIS	1L	16	1	5	548	F	76	0	Non-Vented		New Shell
RIS1L16549	RIS	1L	16	1	5	549	F	75	~5% /1	Non-Vented		Hard Shell
RIS1L16550	RIS	1L	16	1	5	550	M	70	0	Non-Vented		New Shell
RIS1L16551	RIS	1L	16	1	5	551	M	64	0	Non-Vented		Hard Shell
RIS1L16552	RIS	1L	16	1	5	552	M	59	0	Non-Vented		New Shell
RIS1L16553	RIS	1L	16	1	5	553	F	63	moderate 35% /OLD	Non-Vented		New Shell
RIS1L16554	RIS	1L	16	1	6	554	M	87	0	Vented	YES	New Shell
RIS1L16555	RIS	1L	16	1	6	555	F	84	0	Vented	YES	New Shell
RIS1L16556	RIS	1L	16	4	1	556	F	82.6	~60% /3	Vented		Hard Shell V-notched
RIS1L16557	RIS	1L	16	4	2	557	F	78	0	Non-Vented	YES	New Shell
RIS1L16558	RIS	1L	16	4	2	558	F	76	0	Non-Vented		Hard Shell
RIS1L16559	RIS	1L	16	4	2	559	F	64	~5% /OLD	Non-Vented		New Shell
RIS1L16560	RIS	1L	16	4	2	560	F	75	0	Non-Vented		Hard Shell
RIS1L16561	RIS	1L	16	4	2	561	M	64	0	Non-Vented		Hard Shell
RIS1L16562	RIS	1L	16	4	2	562	M	81	0	Non-Vented	YES	Hard Shell
RIS1L16563	RIS	1L	16	4	2	563	F	81	0	Non-Vented		Hard Shell
RIS1L16564	RIS	1L	16	4	2	564	F	72	~10-15% /OLD	Non-Vented		Hard Shell
RIS1L16565	RIS	1L	16	4	2	565	F	59	0	Non-Vented		Hard Shell
RIS1L16566	RIS	1L	16	4	2	566	F	65	0	Non-Vented		New Shell
RIS1L16567	RIS	1L	16	4	2	567	M	80	OLD (minor)	Non-Vented		Hard Shell
	RIS	1L	16	4	3							No lobsters
RIS1L16568	RIS	1L	16	4	4	568	M	80	0	Non-Vented		New Shell

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RIS1L16569	RIS	1L	16	4	4	569	F	73	0	Non-Vented		Hard Shell
RIS1L16570	RIS	1L	16	4	4	570	M	81	0	Non-Vented		Hard Shell
RIS1L16571	RIS	1L	16	4	4	571	M	63	0	Non-Vented		Hard Shell
RIS1L16572	RIS	1L	16	4	4	572	F	73	OLD (minor)	Non-Vented		Hard Shell
RIS1L16573	RIS	1L	16	4	4	573	F	70	0	Non-Vented		New Shell
RIS1L16574	RIS	1L	16	4	4	574	F	76	<5% /OLD	Non-Vented		New Shell
RIS1L16575	RIS	1L	16	4	4	575	F	76	0	Non-Vented		Hard Shell
RIS1L16576	RIS	1L	16	4	4	576	F	71	0	Non-Vented		Hard Shell
RIS1L16577	RIS	1L	16	4	4	577	F	82	<5% /1	Non-Vented		Hard Shell
RIS1L16578	RIS	1L	16	4	4	578	F	73	<5% /1	Non-Vented		Hard Shell
RIS1L16579	RIS	1L	16	4	4	579	M	71	0	Non-Vented		Hard Shell
RIS1L16580	RIS	1L	16	4	4	580	F	63	0	Non-Vented		New Shell
RIS1L16581	RIS	1L	16	4	4	581	F	55	0	Non-Vented		Hard Shell
RIS1L16582	RIS	1L	16	4	4	582	F	63	0	Non-Vented		Hard Shell
RIS1L16583	RIS	1L	16	4	4	583	F	71	0	Non-Vented		Hard Shell
RIS1L16584	RIS	1L	16	4	4	584	F	79	~5% /1	Non-Vented		Hard Shell crackback
RIS1L16585	RIS	1L	16	4	4	585	F	78	0	Non-Vented		Hard Shell
RIS1L16586	RIS	1L	16	4	4	586	F	70	0	Non-Vented		Hard Shell
RIS1L16587	RIS	1L	16	4	4	587	F	79	0	Non-Vented		Hard Shell
RIS1L16588	RIS	1L	16	4	4	588	F	60	0	Non-Vented		Hard Shell
RIS1L16589	RIS	1L	16	4	5	589	F	90	~1% /1	Vented		New Shell
RIS1L16590	RIS	1L	16	4	5	590	F	78	0	Vented		Hard Shell
RIS1L16591	RIS	1L	16	4	6	591	F	74	OLD (minor)	Non-Vented		Hard Shell
RIS1L16592	RIS	1L	16	4	6	592	F	74	OLD (minor)	Non-Vented		Hard Shell
RIS1L16593	RIS	1L	16	4	6	593	F	80	OLD (minor)	Non-Vented		Hard Shell
RIS1L16594	RIS	1L	16	4	6	594	F	79	OLD (minor)	Non-Vented		Hard Shell
RIS1L16595	RIS	1L	16	4	6	595	F	79	~10-15% /2	Non-Vented		Hard Shell w/ old brown eggs
RIS1L16596	RIS	1L	16	4	6	596	F	76	~5% /1	Non-Vented		Hard Shell
RIS1L16597	RIS	1L	16	4	6	597	M	82	0	Non-Vented	YES	New Shell
RIS1L16598	RIS	1L	16	4	6	598	F	80	moderate 10-15% /OLD	Non-Vented		Hard Shell
RIS1L16599	RIS	1L	16	4	6	599	F	68	0	Non-Vented		New Shell
RIS1L16600	RIS	1L	16	4	6	600	F	77	0	Non-Vented		Hard Shell
RIS1L16601	RIS	1L	16	4	6	601	F	69	0	Non-Vented		Hard Shell
RIS1L16602	RIS	1L	16	4	6	602	M	70	0	Non-Vented		New Shell
RIS1L16603	RIS	1L	16	4	6	603	F	75	0	Non-Vented		Hard Shell
RIS1L16604	RIS	1L	16	4	6	604	F	78	<5% /1	Non-Vented		Hard Shell
RIS1L16605	RIS	1L	16	4	6	605	F	80	10-15% /2	Non-Vented	YES	New Shell
RIS1L16606	RIS	1L	16	4	6	606	M	60	0	Non-Vented		Hard Shell
RIS1L16607	RIS	1L	16	4	6	607	F	57	0	Non-Vented		Hard Shell
RIS1L16608	RIS	1L	16	2	1	608	M	70	0	Non-Vented		New Shell
RIS1L16609	RIS	1L	16	2	1	609	F	66	0	Non-Vented		Hard Shell

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RIS1L16610	RIS	1L	16	2	1	610	M	77	0	Non-Vented		Hard Shell
RIS1L16611	RIS	1L	16	2	1	611	M	78	0	Non-Vented		Newly molted
RIS1L16612	RIS	1L	16	2	1	612	M	63	0	Non-Vented		Hard Shell crackback
RIS1L16613	RIS	1L	16	2	1	613	M	83.5	0	Non-Vented	YES	New Shell
RIS1L16614	RIS	1L	16	2	1	614	F	82.6	0	Non-Vented		New Shell V-notched
RIS1L16615	RIS	1L	16	2	2	615	F	68	<5% /1	Vented		Hard Shell crackback
RIS1L16616	RIS	1L	16	2	2	616	M	82.4	~40% /2	Vented	YES	Hard Shell
RIS1L16617	RIS	1L	16	2	3	617	F	80	0	Non-Vented	YES	Hard Shell
RIS1L16618	RIS	1L	16	2	3	618	F	81	0	Non-Vented		New Shell
RIS1L16619	RIS	1L	16	2	3	619	M	78	minor <5% /OLD	Non-Vented		New Shell
RIS1L16620	RIS	1L	16	2	3	620	F	73	0	Non-Vented		New Shell
	RIS	1L	16	2	4							No lobsters
RIS1L16621	RIS	1L	16	2	5	621	F	76	~1% /1	Non-Vented		Hard Shell crackback
RIS1L16622	RIS	1L	16	2	5	622	M	64	~5% /OLD	Non-Vented		Hard Shell
RIS1L16623	RIS	1L	16	2	5	623	F	75	~75% /3	Non-Vented		Hard Shell
RIS1L16624	RIS	1L	16	2	5	624	F	68	0	Non-Vented		Hard Shell
RIS1L16625	RIS	1L	16	2	5	625	M	68	0	Non-Vented		Hard Shell
RIS1L16626	RIS	1L	16	2	5	626	M	75	~1% /1	Non-Vented		Hard Shell
RIS1L16627	RIS	1L	16	2	5	627	F	79	~5% /1	Non-Vented		New Shell
RIS1L16628	RIS	1L	16	2	5	628	M	64	<5% /1	Non-Vented		New Shell
RIS1L16629	RIS	1L	16	2	6	629	F	86	0	Vented	YES	Hard Shell
RIS1L16630	RIS	1L	16	2	6	630	F	83.5	0	Vented	YES	New Shell
RIS1L16631	RIS	1L	16	2	6	631	F	82	0	Vented	YES	New Shell
RIS1L16632	RIS	1L	16	2	6	632	F	83.8	10-15% /OLD	Vented	YES	New Shell
RIS1L16633	RIS	1L	16	3	1	633	F	88	0	Vented	YES	New Shell
RIS1L16634	RIS	1L	16	3	1	634	F	85	OLD (minor)	Vented		Hard Shell V-notched
RIS1L16635	RIS	1L	16	3	1	635	F	83	0	Vented	YES	Hard Shell
RIS1L16636	RIS	1L	16	3	2	636	F	73	50-60% /3	Non-Vented		Hard Shell crackback
RIS1L16637	RIS	1L	16	3	2	637	F	89	0	Non-Vented	YES	New Shell
RIS1L16638	RIS	1L	16	3	2	638	F	80	0	Non-Vented		Hard Shell
RIS1L16639	RIS	1L	16	3	2	639	M	70	OLD (minor)	Non-Vented		New Shell
RIS1L16640	RIS	1L	16	3	2	640	F	81	<1% /OLD	Non-Vented	YES	New Shell
RIS1L16641	RIS	1L	16	3	2	641	F	66	0	Non-Vented		Hard Shell
RIS1L16642	RIS	1L	16	3	2	642	F	66	0	Non-Vented		Hard Shell
RIS1L16643	RIS	1L	16	3	2	643	F	77	~5% /1	Non-Vented		Hard Shell
RIS1L16644	RIS	1L	16	3	3	644	F	82	OLD (minor)	Vented	YES	New Shell
RIS1L16645	RIS	1L	16	3	3	645	M	60	0	Vented		Hard Shell
RIS1L16646	RIS	1L	16	3	3	646	M	71	0	Vented		New Shell

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RIS1L16647	RIS	1L	16	3	3	647	M	85	0	Vented	YES	Hard Shell
RIS1L16648	RIS	1L	16	3	4	648	M	79	0	Non-Vented		Hard Shell
RIS1L16649	RIS	1L	16	3	4	649	F	86	0	Non-Vented	YES	New Shell
RIS1L16650	RIS	1L	16	3	4	650	F	77	0	Non-Vented		Hard Shell
RIS1L16651	RIS	1L	16	3	4	651	M	72	~1% /OLD	Non-Vented		Hard Shell
RIS1L16652	RIS	1L	16	3	4	652	M	80	0	Non-Vented		Hard Shell
RIS1L16653	RIS	1L	16	3	4	653	F	76	0	Non-Vented		Hard Shell crackback
RIS1L16654	RIS	1L	16	3	4	654	M	80	~80-85% /3	Non-Vented		Hard Shell
RIS1L16655	RIS	1L	16	3	4	655	M	57	0	Non-Vented		New Shell
RIS1L16656	RIS	1L	16	3	4	656	M	72	<5% /OLD	Non-Vented		New Shell
RIS1L16657	RIS	1L	16	3	4	657	F	56	0	Non-Vented		Hard Shell
RIS1L16658	RIS	1L	16	3	5	658	F	91	<5% /OLD	Vented		Hard Shell V-notched
RIS1L16659	RIS	1L	16	3	5	659	F	82	<1% /OLD	Vented	YES	Hard Shell
RIS1L16660	RIS	1L	16	3	5	660	F	70	0	Vented		Newly Molted soft shell
RIS1L16661	RIS	1L	16	3	5	661	F	80	<5% /1	Vented		Hard Shell
RIS1L16662	RIS	1L	16	3	6	662	F	79	0	Non-Vented		Hard Shell
RIS1L16663	RIS	1L	16	3	6	663	M	84	0	Non-Vented	YES	Hard Shell
RIS1L16664	RIS	1L	16	3	6	664	F	73	0	Non-Vented		Hard Shell
RIS1L16665	RIS	1L	16	3	6	665	M	80	~1% /1	Non-Vented		Hard Shell
RIS1L16666	RIS	1L	16	3	6	666	M	82.7	<1% /1	Non-Vented		Hard Shell
RIS1L16667	RIS	1L	16	3	6	667	M	82.4	10-15% /2	Non-Vented		Hard Shell
RIS1L16668	RIS	1L	16	3	6	668	F	65	0	Non-Vented		Hard Shell
RIS1L16669	RIS	1L	16	3	6	669	F	78	0	Non-Vented		Hard Shell
RIS1L16670	RIS	1L	16	3	6	670	M	66	0	Non-Vented		New Shell
RIS1L16671	RIS	1L	16	5	1	671	F	71	0	Non-Vented		Hard Shell
RIS1L16672	RIS	1L	16	5	1	672	F	77	0	Non-Vented		Hard Shell
RIS1L16673	RIS	1L	16	5	1	673	M	60	0	Non-Vented		Hard Shell
RIS1L16674	RIS	1L	16	5	1	674	F	70	<5% /OLD	Non-Vented		Hard Shell
RIS1L16675	RIS	1L	16	5	1	675	F	81	<5% /1	Non-Vented		Hard Shell
RIS1L16676	RIS	1L	16	5	1	676	M	75	0	Non-Vented		New Shell
RIS1L16677	RIS	1L	16	5	1	677	F	68	0	Non-Vented		Hard Shell
RIS1L16678	RIS	1L	16	5	1	678	F	55	0	Non-Vented		New Shell
RIS1L16679	RIS	1L	16	5	1	679	F	60	0	Non-Vented		Hard Shell
RIS1L16680	RIS	1L	16	5	1	680	F	62	0	Non-Vented		Hard Shell
RIS1L16681	RIS	1L	16	5	1	681	F	80	0	Non-Vented		Hard Shell
RIS1L16682	RIS	1L	16	5	1	682	F	58	0	Non-Vented		Hard Shell
	RIS	1L	16	5	2							No lobsters
RIS1L16683	RIS	1L	16	5	3	683	F	75	0	Non-Vented		Hard Shell
RIS1L16684	RIS	1L	16	5	3	684	M	73	0	Non-Vented		New Shell
RIS1L16685	RIS	1L	16	5	3	685	M	81	15-20% /2	Non-Vented		Hard Shell
RIS1L16686	RIS	1L	16	5	3	686	F	79	<5% /1	Non-Vented		Hard Shell

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RIS1L16687	RIS	1L	16	5	3	687	M	81	<5% /OLD	Non-Vented		New Shell
RIS1L16688	RIS	1L	16	5	3	688	M	80	<5% /OLD	Non-Vented		Hard Shell
RIS1L16689	RIS	1L	16	5	3	689	F	78	~5% /1	Non-Vented		Hard Shell
RIS1L16690	RIS	1L	16	5	3	690	F	87	<10% /OLD	Non-Vented		New Shell
RIS1L16691	RIS	1L	16	5	3	691	F	79	<1% /1	Non-Vented		Hard Shell
RIS1L16692	RIS	1L	16	5	3	692	F	70	<5% /OLD	Non-Vented		Hard Shell
RIS1L16693	RIS	1L	16	5	3	693	F	70	0	Non-Vented		Hard Shell
RIS1L16694	RIS	1L	16	5	3	694	M	79	0	Non-Vented		Hard Shell
RIS1L16695	RIS	1L	16	5	4	695	F	88	OLD <5%	Vented		Hard Shell V-notched
RIS1L16696	RIS	1L	16	5	4	696	F	87	0	Vented		New Shell
RIS1L16697	RIS	1L	16	5	4	697	F	86	OLD <5%	Vented		New Shell V-notched
RIS1L16698	RIS	1L	16	5	5	698	F	62	0	Non-Vented		New Shell
RIS1L16699	RIS	1L	16	5	5	699	M	73	OLD 1%	Non-Vented		New Shell
RIS1L16700	RIS	1L	16	5	5	700	M	75	0	Non-Vented		Hard Shell
	RIS	1L	16	5	6							No lobsters
	RIS	1L	18	1	1							No lobsters
RIS1L18701	RIS	1L	18	1	2	701	F	79	~5% /1	Non-Vented		Hard Shell
RIS1L18702	RIS	1L	18	1	2	702	F	77	0	Non-Vented		Hard Shell
RIS1L18703	RIS	1L	18	1	2	703	F	80	0	Non-Vented		New Shell
RIS1L18704	RIS	1L	18	1	2	704	F	79	0	Non-Vented		Hard Shell
RIS1L18705	RIS	1L	18	1	2	705	M	81	0	Non-Vented	YES	New Shell
RIS1L18706	RIS	1L	18	1	2	706	F	82	OLD (minor)	Non-Vented	YES	New Shell
RIS1L18707	RIS	1L	18	1	2	707	F	79	OLD ~5%	Non-Vented		Hard Shell
RIS1L18708	RIS	1L	18	1	2	708	F	82	~5% /1	Non-Vented	YES	Hard Shell
RIS1L18709	RIS	1L	18	1	2	709	F	80	0	Non-Vented		Hard Shell
RIS1L18710	RIS	1L	18	1	2	710	M	79	0	Non-Vented		New Shell
RIS1L18711	RIS	1L	18	1	3	711	M	68	0	Vented		Hard Shell
RIS1L18712	RIS	1L	18	1	3	712	F	79	0	Vented		Hard Shell
RIS1L18713	RIS	1L	18	1	3	713	F	81	~5% /OLD	Vented		Hard Shell
RIS1L18714	RIS	1L	18	1	3	714	F	82.9	0	Vented		New Shell V-notched
RIS1L18715	RIS	1L	18	1	3	715	F	85	0	Vented	YES	New Shell
RIS1L18716	RIS	1L	18	1	3	716	F	82	~5% /OLD	Vented		Hard Shell
RIS1L18717	RIS	1L	18	1	4	717	F	78	<10% /1	Non-Vented		Hard Shell
RIS1L18718	RIS	1L	18	1	4	718	M	68	<5% /OLD	Non-Vented		Hard Shell
RIS1L18719	RIS	1L	18	1	4	719	M	75	0	Non-Vented		Hard Shell
RIS1L18720	RIS	1L	18	1	4	720	M	81	0	Non-Vented		New Shell
RIS1L18721	RIS	1L	18	1	4	721	M	78	0	Non-Vented		Hard Shell
RIS1L18722	RIS	1L	18	1	4	722	F	76	0	Non-Vented		Hard Shell
RIS1L18723	RIS	1L	18	1	4	723	F	77	0	Non-Vented		Hard Shell
RIS1L18724	RIS	1L	18	1	4	724	M	79	<5% /OLD	Non-Vented		Hard Shell
RIS1L18725	RIS	1L	18	1	4	725	F	82.9	0	Non-Vented	YES	New Shell

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RIS1L18726	RIS	1L	18	1	4	726	M	70	0	Non-Vented		Hard Shell
RIS1L18727	RIS	1L	18	1	4	727	F	78	5-10% /1	Non-Vented		Hard Shell
RIS1L18728	RIS	1L	18	1	4	728	F	80	5% /OLD	Non-Vented		New Shell
RIS1L18729	RIS	1L	18	1	4	729	M	73	0	Non-Vented		Hard Shell
RIS1L18730	RIS	1L	18	1	4	730	M	68	0	Non-Vented		New Shell
RIS1L18731	RIS	1L	18	1	4	731	M	70	0	Non-Vented		New Shell
RIS1L18732	RIS	1L	18	1	4	732	F	73	<1% /1	Non-Vented		Hard Shell
RIS1L18733	RIS	1L	18	1	4	733	F	77	0	Non-Vented		Hard Shell
RIS1L18734	RIS	1L	18	1	4	734	F	70	0	Non-Vented		Hard Shell
RIS1L18735	RIS	1L	18	1	4	735	F	77	0	Non-Vented		New Shell
RIS1L18736	RIS	1L	18	1	4	736	F	67	<1% /OLD	Non-Vented		Hard Shell
RIS1L18737	RIS	1L	18	1	4	737	F	69	0	Non-Vented		New Shell
RIS1L18738	RIS	1L	18	1	4	738	F	64	<5% /OLD	Non-Vented		Hard Shell
RIS1L18739	RIS	1L	18	1	4	739	F	73	0	Non-Vented		Hard Shell
RIS1L18740	RIS	1L	18	1	4	740	F	71	<1% /OLD	Non-Vented		Hard Shell
RIS1L18741	RIS	1L	18	1	4	741	M	71	0	Non-Vented		Hard Shell
RIS1L18742	RIS	1L	18	1	4	742	F	54	0	Non-Vented		Hard Shell
RIS1L18743	RIS	1L	18	1	5	743	F	82	1% /OLD	Vented		Hard Shell
RIS1L18744	RIS	1L	18	1	5	744	F	75	<1% /OLD	Vented		Hard Shell
RIS1L18745	RIS	1L	18	1	6	745	F	79	0	Non-Vented		New Shell
RIS1L18746	RIS	1L	18	1	6	746	F	81	0	Non-Vented		Hard Shell
RIS1L18747	RIS	1L	18	1	6	747	F	69	0	Non-Vented		New Shell
RIS1L18748	RIS	1L	18	1	6	748	F	75	0	Non-Vented		Hard Shell
RIS1L18749	RIS	1L	18	1	6	749	F	58	0	Non-Vented		Hard Shell
RIS1L18750	RIS	1L	18	1	6	750	F	78	0	Non-Vented		Hard Shell
RIS1L18751	RIS	1L	18	1	6	751	F	73	0	Non-Vented		Hard Shell
RIS1L18752	RIS	1L	18	1	6	752	F	68	0	Non-Vented		New Shell
RIS1L18753	RIS	1L	18	1	6	753	F	78	2	Non-Vented		Hard Shell crackback
RIS1L18754	RIS	1L	18	1	6	754	F	72	0	Non-Vented		New Shell
RIS1L18755	RIS	1L	18	1	6	755	F	79	~1% /OLD	Non-Vented		New Shell
RIS1L18756	RIS	1L	18	1	6	756	M	68	0	Non-Vented		New Shell
RIS1L18757	RIS	1L	18	1	6	757	M	75	0	Non-Vented		New Shell
RIS1L18758	RIS	1L	18	1	6	758	F	77	0	Non-Vented		New Shell
RIS1L18759	RIS	1L	18	1	6	759	M	70	<5% /OLD	Non-Vented		Hard Shell
RIS1L18760	RIS	1L	18	1	6	760	F	73	0	Non-Vented		Hard Shell
RIS1L18761	RIS	1L	18	1	6	761	M	66	0	Non-Vented		Hard Shell
RIS1L18762	RIS	1L	18	1	6	762	F	62	<5% /OLD	Non-Vented		New Shell
RIS1L18763	RIS	1L	18	1	6	763	F	79	<5% /OLD	Non-Vented		Hard Shell
RIS1L18764	RIS	1L	18	2	1	764	F	78	0	Non-Vented		Hard Shell
RIS1L18765	RIS	1L	18	2	1	765	M	78	0	Non-Vented		Hard Shell
RIS1L18766	RIS	1L	18	2	1	766	F	89	~5% /1	Non-Vented		Hard Shell V-notched

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RIS1L18767	RIS	1L	18	2	1	767	F	87	0	Non-Vented	YES	New Shell
RIS1L18768	RIS	1L	18	2	1	768	F	80	0	Non-Vented		Hard Shell
RIS1L18769	RIS	1L	18	2	1	769	M	83.1	0	Non-Vented	YES	Hard Shell
RIS1L18770	RIS	1L	18	2	1	770	F	69	~1% /OLD	Non-Vented		Hard Shell
RIS1L18771	RIS	1L	18	2	1	771	M	71	0	Non-Vented		New Shell
RIS1L18772	RIS	1L	18	2	1	772	M	58	0	Non-Vented		Hard Shell
RIS1L18773	RIS	1L	18	2	1	773	F	70	0	Non-Vented		Hard Shell
RIS1L18774	RIS	1L	18	2	1	774	F	75	0	Non-Vented		New Shell
RIS1L18775	RIS	1L	18	2	1	775	F	78	~1% /OLD	Non-Vented		Hard Shell
RIS1L18776	RIS	1L	18	2	1	776	M	82	0	Non-Vented	YES	New Shell
RIS1L18777	RIS	1L	18	2	1	777	F	71	5% /OLD	Non-Vented		Hard Shell
RIS1L18778	RIS	1L	18	2	1	778	F	69	0	Non-Vented		Hard Shell
RIS1L18779	RIS	1L	18	2	1	779	F	61	0	Non-Vented		New Shell
RIS1L18780	RIS	1L	18	2	1	780	M	75	0	Non-Vented		Hard Shell
RIS1L18781	RIS	1L	18	2	1	781	M	82.7	0	Non-Vented	YES	Hard Shell
RIS1L18782	RIS	1L	18	2	1	782	M	78	0	Non-Vented		New Shell
RIS1L18783	RIS	1L	18	2	1	783	M	71	0	Non-Vented		New Shell
RIS1L18784	RIS	1L	18	2	1	784	F	73	0	Non-Vented		New Shell
RIS1L18785	RIS	1L	18	2	1	785	M	67	0	Non-Vented		Hard Shell
RIS1L18786	RIS	1L	18	2	1	786	F	61	0	Non-Vented		New Shell
RIS1L18787	RIS	1L	18	2	1	787	F	76	0	Non-Vented		New Shell
RIS1L18788	RIS	1L	18	2	2	788	F	69	0	Vented		New Shell
RIS1L18789	RIS	1L	18	2	2	789	F	80	<1% /1	Vented		Hard Shell
RIS1L18790	RIS	1L	18	2	2	790	M	81	0	Vented		New Shell
RIS1L18791	RIS	1L	18	2	2	791	M	77	5% /OLD	Vented		New Shell
RIS1L18792	RIS	1L	18	2	2	792	F	81	0	Vented		Hard Shell
RIS1L18793	RIS	1L	18	2	2	793	F	75	1% /OLD	Vented		New Shell
RIS1L18794	RIS	1L	18	2	2	794	F	81	5% /OLD	Vented		New Shell
RIS1L18795	RIS	1L	18	2	3	795	M	75	0	Non-Vented		Hard Shell
RIS1L18796	RIS	1L	18	2	3	796	F	77	~20% /2	Non-Vented		Hard Shell
RIS1L18797	RIS	1L	18	2	3	797	M	78	1% /OLD	Non-Vented		Hard Shell
RIS1L18798	RIS	1L	18	2	3	798	M	78	0	Non-Vented		New Shell
RIS1L18799	RIS	1L	18	2	3	799	M	81	<5% /OLD	Non-Vented		New Shell
RIS1L18800	RIS	1L	18	2	3	800	M	72	0	Non-Vented		New Shell
RIS1L18801	RIS	1L	18	2	3	801	M	77	0	Non-Vented		New Shell
RIS1L18802	RIS	1L	18	2	3	802	F	82	0	Non-Vented		Hard Shell
RIS1L18803	RIS	1L	18	2	3	803	F	62	0	Non-Vented		Hard Shell
RIS1L18804	RIS	1L	18	2	3	804	F	68	0	Non-Vented		Hard Shell
RIS1L18805	RIS	1L	18	2	3	805	F	64	0	Non-Vented		Hard Shell
RIS1L18806	RIS	1L	18	2	4	806	M	76	1% /OLD	Vented		New Shell
RIS1L18807	RIS	1L	18	2	4	807	F	76	0	Vented		New Shell
RIS1L18808	RIS	1L	18	2	5	808	F	88	<1% /OLD	Non-Vented	YES	New Shell

Sample ID	Study	Survey	Site	Trawl No.	Trap No.	Sample No.	Sex	Carapace length (mm)	External Disease % /Category	Pot Type	Tissue Chemistry	Comments
RIS1L18809	RIS	1L	18	2	5	809	F	85	0	Non-Vented	YES	New Shell
RIS1L18810	RIS	1L	18	2	5	810	M	81	0	Non-Vented		New Shell
RIS1L18811	RIS	1L	18	2	5	811	F	78	<5% /1	Non-Vented		Hard Shell
RIS1L18812	RIS	1L	18	2	5	812	F	74	0	Non-Vented		Hard Shell
RIS1L18813	RIS	1L	18	2	5	813	M	68	0	Non-Vented		New Shell
RIS1L18814	RIS	1L	18	2	5	814	F	70	0	Non-Vented		Hard Shell
RIS1L18815	RIS	1L	18	2	5	815	M	70	0	Non-Vented		Hard Shell
RIS1L18816	RIS	1L	18	2	5	816	F	70	0	Non-Vented		Hard Shell
RIS1L18817	RIS	1L	18	2	6	817	M	70	1% /OLD	Vented		Hard Shell
RIS1L18818	RIS	1L	18	3	1	818	F	82.8	~15% /2	Vented		Hard Shell
RIS1L18819	RIS	1L	18	3	1	819	M	81	0	Vented		Hard Shell
RIS1L18820	RIS	1L	18	3	1	820	F	81	<5% /1	Vented		Hard Shell crackback
RIS1L18821	RIS	1L	18	3	1	821	M	62	0	Vented		New Shell
RIS1L18822	RIS	1L	18	3	2	822	F	84	~5% /1	Non-Vented		Hard Shell V-notched
RIS1L18823	RIS	1L	18	3	2	823	M	59	0	Non-Vented		Hard Shell
RIS1L18824	RIS	1L	18	3	2	824	F	88	0	Non-Vented		New Shell V-notched
RIS1L18825	RIS	1L	18	3	2	825	F	80	0	Non-Vented		Hard Shell
RIS1L18826	RIS	1L	18	3	2	826	F	78	0	Non-Vented		Hard Shell
RIS1L18827	RIS	1L	18	3	2	827	F	79	0	Non-Vented		Hard Shell
RIS1L18828	RIS	1L	18	3	2	828	M	77	0	Non-Vented		Hard Shell
RIS1L18829	RIS	1L	18	3	2	829	F	91	<5% /OLD	Non-Vented		New Shell V-notched
RIS1L18830	RIS	1L	18	3	2	830	F	64	0	Non-Vented		New Shell
RIS1L18831	RIS	1L	18	3	2	831	M	75	1% /OLD	Non-Vented		Hard Shell
RIS1L18832	RIS	1L	18	3	3	832	F	82	5-10% /1	Vented		Hard Shell
RIS1L18833	RIS	1L	18	3	3	833	F	85	5-10% /1	Vented		Hard Shell
RIS1L18834	RIS	1L	18	3	3	834	F	92	0	Vented		New Shell
RIS1L18835	RIS	1L	18	3	3	835	F	74	<1% /1	Vented		Hard Shell
RIS1L18836	RIS	1L	18	3	4	836	F	65	0	Non-Vented		Hard Shell
RIS1L18837	RIS	1L	18	3	4	837	F	80	<5% /OLD	Non-Vented		Hard Shell
RIS1L18838	RIS	1L	18	3	4	838	F	73	<1% /1	Non-Vented		Hard Shell
RIS1L18839	RIS	1L	18	3	4	839	M	76	0	Non-Vented		Hard Shell
RIS1L18840	RIS	1L	18	3	4	840	F	80	5-10% /1	Non-Vented		Hard Shell crackback
RIS1L18841	RIS	1L	18	3	4	841	F	69	1% /1	Non-Vented		Hard Shell
RIS1L18842	RIS	1L	18	3	4	842	F	80	0	Non-Vented		Hard Shell
RIS1L18843	RIS	1L	18	3	4	843	F	71	OLD (minor)	Non-Vented		New Shell
RIS1L18844	RIS	1L	18	3	4	844	M	70	0	Non-Vented		Hard Shell
RIS1L18845	RIS	1L	18	3	4	845	F	70	0	Non-Vented		New Shell
RIS1L18846	RIS	1L	18	3	4	846	M	70	0	Non-Vented		Hard Shell
RIS1L18847	RIS	1L	18	3	4	847	F	83.3	0	Non-Vented		New Shell
RIS1L18848	RIS	1L	18	3	4	848	M	76	0	Non-Vented		New Shell

Sample ID	Study	Survey	Site	Trawl No.	Trap No.	Sample No.	Sex	Carapace length (mm)	External Disease % /Category	Pot Type	Tissue Chemistry	Comments
RIS1L18849	RIS	1L	18	3	4	849	M	78	0	Non-Vented		New Shell
RIS1L18850	RIS	1L	18	3	5	850	F	81	5-10% /1	Vented		Hard Shell
RIS1L18851	RIS	1L	18	3	5	851	F	95	0	Vented		New Shell
RIS1L18852	RIS	1L	18	3	5	852	F	82.4	OLD <5%	Vented		New Shell
RIS1L18853	RIS	1L	18	3	5	853	M	76	0	Vented		Hard Shell
RIS1L18854	RIS	1L	18	3	5	854	M	82	0	Vented		Hard Shell
RIS1L18855	RIS	1L	18	3	6	855	F	57	>5% /OLD	Non-Vented		Hard Shell
RIS1L18856	RIS	1L	18	3	6	856	M	80	0	Non-Vented		Hard Shell
RIS1L18857	RIS	1L	18	3	6	857	M	81	<5% /OLD	Non-Vented		Hard Shell
RIS1L18858	RIS	1L	18	3	6	858	F	81	<5% /1	Non-Vented		Hard Shell
RIS1L18859	RIS	1L	18	3	6	859	F	79	~1% /OLD	Non-Vented		New Shell
RIS1L18860	RIS	1L	18	3	6	860	M	64	0	Non-Vented		New Shell
RIS1L18861	RIS	1L	18	3	6	861	M	61	0	Non-Vented		New Shell
RIS1L18862	RIS	1L	18	3	6	862	M	62	0	Non-Vented		Hard Shell
RIS1L18863	RIS	1L	18	3	6	863	M	71	0	Non-Vented		Hard Shell
RIS1L18864	RIS	1L	18	3	6	864	M	67	0	Non-Vented		Hard Shell
RIS1L18865	RIS	1L	18	3	6	865	M	71	0	Non-Vented		New Shell
RIS1L18866	RIS	1L	18	3	6	866	F	75	0	Non-Vented		Hard Shell
RIS1L18867	RIS	1L	18	4	1	867	M	79	0	Non-Vented		New Shell
RIS1L18868	RIS	1L	18	4	1	868	F	78	0	Non-Vented		Hard Shell
RIS1L18869	RIS	1L	18	4	1	869	M	76	0	Non-Vented		Hard Shell
RIS1L18870	RIS	1L	18	4	1	870	F	71	0	Non-Vented		Hard Shell
RIS1L18871	RIS	1L	18	4	1	871	F	82	0	Non-Vented		New Shell V-notched
RIS1L18872	RIS	1L	18	4	1	872	F	72	~1% /OLD	Non-Vented		Hard Shell
RIS1L18873	RIS	1L	18	4	1	873	M	72	0	Non-Vented		Hard Shell
RIS1L18874	RIS	1L	18	4	1	874	M	87	0	Non-Vented		Hard Shell
RIS1L18875	RIS	1L	18	4	1	875	F	81	5-10% /1	Non-Vented		Hard Shell
RIS1L18876	RIS	1L	18	4	1	876	F	73	minor <5% /OLD	Non-Vented		Hard Shell
RIS1L18877	RIS	1L	18	4	1	877	F	73	<5% /OLD	Non-Vented		Hard Shell
RIS1L18878	RIS	1L	18	4	1	878	M	72	0	Non-Vented		New Shell
RIS1L18879	RIS	1L	18	4	1	879	M	73	0	Non-Vented		New Shell
RIS1L18880	RIS	1L	18	4	1	880	F	68	0	Non-Vented		Hard Shell
RIS1L18881	RIS	1L	18	4	1	881	F	72	0	Non-Vented		New Shell
RIS1L18882	RIS	1L	18	4	1	882	F	73	0	Non-Vented		Hard Shell
RIS1L18883	RIS	1L	18	4	1	883	F	76	0	Non-Vented		Hard Shell
RIS1L18884	RIS	1L	18	4	1	884	F	70	0	Non-Vented		Hard Shell
RIS1L18885	RIS	1L	18	4	2	885	F	88	0	Vented		New Shell
RIS1L18886	RIS	1L	18	4	2	886	F	87	~1% /OLD	Vented		New Shell
RIS1L18887	RIS	1L	18	4	3	887	M	86	<5% /OLD	Non-Vented		Hard Shell
RIS1L18888	RIS	1L	18	4	3	888	F	81	0	Non-Vented		New Shell
RIS1L18889	RIS	1L	18	4	3	889	F	82	0	Non-Vented		New Shell

Sample ID	Study	Survey	Site	Trawl No.	Trap No.	Sample No.	Sex	Carapace length (mm)	External Disease % /Category	Pot Type	Tissue Chemistry	Comments
RIS1L18890	RIS	1L	18	4	3	890	F	79	<5% /1	Non-Vented		Hard Shell
RIS1L18891	RIS	1L	18	4	3	891	F	68	0	Non-Vented		Hard Shell
RIS1L18892	RIS	1L	18	4	3	892	M	62	5-10% /OLD	Non-Vented		New Shell
RIS1L18893	RIS	1L	18	4	3	893	F	57	0	Non-Vented		New Shell
RIS1L18894	RIS	1L	18	4	3	894	F	80	~5% /1	Non-Vented		Hard Shell
RIS1L18895	RIS	1L	18	4	3	895	F	80	0	Non-Vented		New Shell
RIS1L18896	RIS	1L	18	4	3	896	F	67	<5% /OLD	Non-Vented		Hard Shell
RIS1L18897	RIS	1L	18	4	3	897	M	74	0	Non-Vented		Hard Shell
RIS1L18898	RIS	1L	18	4	3	898	F	71	<5% /OLD	Non-Vented		New Shell
RIS1L18899	RIS	1L	18	4	4	899	F	82.4	<5% /OLD	Vented		New Shell
RIS1L18900	RIS	1L	18	4	4	900	F	81	1-5% /1	Vented		Hard Shell
RIS1L18901	RIS	1L	18	4	5	901	M	82	0	Non-Vented		New Shell
RIS1L18902	RIS	1L	18	4	5	902	F	75	1% /OLD	Non-Vented		Hard Shell
RIS1L18903	RIS	1L	18	4	5	903	F	76	<5% /OLD	Non-Vented		Hard Shell
RIS1L18904	RIS	1L	18	4	5	904	M	77	<5% /OLD	Non-Vented		New Shell
RIS1L18905	RIS	1L	18	4	5	905	F	80	<5% /OLD	Non-Vented		Hard Shell
RIS1L18906	RIS	1L	18	4	5	906	M	82	0	Non-Vented		New Shell
RIS1L18907	RIS	1L	18	4	5	907	F	82	5-10% /1	Non-Vented		Hard Shell crackback
RIS1L18908	RIS	1L	18	4	5	908	F	74	0	Non-Vented		Hard Shell
RIS1L18909	RIS	1L	18	4	5	909	F	80	5% /OLD	Non-Vented		Hard Shell
RIS1L18910	RIS	1L	18	4	5	910	F	73	0	Non-Vented		Hard Shell
RIS1L18911	RIS	1L	18	4	5	911	M	62	<1% /1	Non-Vented		New Shell
RIS1L18912	RIS	1L	18	4	5	912	F	78	0	Non-Vented		New Shell
RIS1L18913	RIS	1L	18	4	5	913	F	76	1% /OLD	Non-Vented		Hard Shell
RIS1L18914	RIS	1L	18	4	5	914	F	64	0	Non-Vented		New Shell
RIS1L18915	RIS	1L	18	4	6	915	F	84	0	Vented		New Shell
RIS1L18916	RIS	1L	18	4	6	916	F	81	<5% /OLD	Vented		New Shell
RIS1L18917	RIS	1L	18	5	1	917	F	97	<5% /OLD	Vented		New Shell
RIS1L18918	RIS	1L	18	5	1	918	F	85	<5% /OLD	Vented		New Shell
RIS1L18919	RIS	1L	18	5	2	919	F	61	0	Non-Vented		Hard Shell
RIS1L18920	RIS	1L	18	5	2	920	F	81	<5% /1	Non-Vented		Hard Shell
RIS1L18921	RIS	1L	18	5	2	921	M	65	0	Non-Vented		Hard Shell
RIS1L18922	RIS	1L	18	5	2	922	F	74	0	Non-Vented		Hard Shell
RIS1L18923	RIS	1L	18	5	2	923	M	72	<5% /OLD	Non-Vented		Hard Shell
RIS1L18924	RIS	1L	18	5	2	924	F	82.9	0	Non-Vented		Hard Shell
RIS1L18925	RIS	1L	18	5	2	925	F	67	<5% /OLD	Non-Vented		New Shell
RIS1L18926	RIS	1L	18	5	2	926	M	66	0	Non-Vented		Hard Shell
RIS1L18927	RIS	1L	18	5	2	927	F	75	0	Non-Vented		New Shell
RIS1L18928	RIS	1L	18	5	2	928	M	76	0	Non-Vented		Hard Shell
RIS1L18929	RIS	1L	18	5	2	929	M	78	5-10% /1	Non-Vented		Hard Shell crackback
RIS1L18930	RIS	1L	18	5	3	930	F	69	0	Vented		New Shell

Sample ID	Study	Survey	Site	Trawl No.	Trap No.	Sample No.	Sex	Carapace length (mm)	External Disease % /Category	Pot Type	Tissue Chemistry	Comments
RIS1L18931	RIS	1L	18	5	3	931	F	78	5-10% /1	Vented		Hard Shell crackback
RIS1L18932	RIS	1L	18	5	4	932	F	59	0	Non-Vented		Hard Shell
RIS1L18933	RIS	1L	18	5	4	933	F	79	0	Non-Vented		Hard Shell
RIS1L18934	RIS	1L	18	5	4	934	F	69	0	Non-Vented		New Shell
RIS1L18935	RIS	1L	18	5	4	935	M	77	0	Non-Vented		New Shell
RIS1L18936	RIS	1L	18	5	4	936	F	78	0	Non-Vented		Hard Shell
RIS1L18937	RIS	1L	18	5	4	937	M	67	0	Non-Vented		Hard Shell
RIS1L18938	RIS	1L	18	5	5	938	F	87	0	Vented		New Shell
RIS1L18939	RIS	1L	18	5	5	939	F	82	<5% /OLD	Vented		New Shell
RIS1L18940	RIS	1L	18	5	5	940	F	73	0	Vented		New Shell
RIS1L18941	RIS	1L	18	5	6	941	F	70	0	Non-Vented		New Shell
RIS1L18942	RIS	1L	18	5	6	942	M	57	0	Non-Vented		New Shell
RIS1L18943	RIS	1L	18	5	6	943	F	79	0	Non-Vented		New Shell
RIS1L18944	RIS	1L	18	5	6	944	F	79	0	Non-Vented		Hard Shell
RIS1L18945	RIS	1L	18	5	6	945	M	76	0	Non-Vented		New Shell
RIS1L18946	RIS	1L	18	5	6	946	F	81	0	Non-Vented		Hard Shell
RIS1L18947	RIS	1L	18	5	6	947	F	77	<5% /OLD	Non-Vented		New Shell
RIS1L18948	RIS	1L	18	5	6	948	F	70	0	Non-Vented		New Shell
RIS1L18949	RIS	1L	18	5	6	949	M	75	0	Non-Vented		New Shell
RIS1L18950	RIS	1L	18	5	6	950	F	79	<5% /OLD	Non-Vented		Hard Shell

APPENDIX B

Lobster Tissue Contaminant Sample and Quality Control Data

QA/QC Summary

Sample Data

Quality Control Data

Analytical Data